NANOPHASE TECHNOLOGIES CORPORATION
Form 10-K
March 29, 2013
Table of Contents

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(D)

OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2012

or

[ ] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE

SECURITIES EXCHANGE ACT OF 1934

FOR THE TRANSITION PERIOD FROM _____ TO _____

COMMISSION FILE NUMBER 000-22333

NANOPHASE TECHNOLOGIES CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**36-3687863**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

1319 Marquette Drive, Romeoville, Illinois 60446

(Address of principal executive offices) (zip code)

Registrant s telephone number, including area code: **(630) 771-6708**

Securities registered pursuant to Section 12(b) of the Act: **None**

Securities registered pursuant to Section 12(g) of the Act:

Common Stock, par value $.01 per share

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ¨ No þ

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ¨ No þ

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes þ No ¨

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). þ Yes ¨ No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ¨

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definition of large accelerated filer, accelerated filer and smaller reporting company in Rule 12B-2 of the Exchange Act. (Check one):

Large accelerated filer ¨	Accelerated filer ¨
Non-accelerated filer ¨	Smaller reporting company þ

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ¨ No þ

The aggregate market value of the registrant s voting stock held by non-affiliates of the registrant based upon the last reported sale price of the registrant s common stock on June 29, 2012 was $4,783,726 as of such date.

The number of shares outstanding of the registrant s common stock, par value $.01, as of March 15, 2013 was 28,468,162.

DOCUMENTS INCORPORATED BY REFERENCE

None.

Table of Contents

Table of Contents

PART I

PART II

PART III

PART IV

Table of Contents

PART I

Item 1. Business

General

Nanophase Technologies Corporation (Nanophase or the Company , including we , our or us) is an advanced ma and applications developer and commercial manufacturer with an integrated family of nanomaterial technologies. Nanophase produces engineered nanomaterials for use in a variety of diverse markets: personal care including sunscreens, architectural coatings, industrial coating ingredients, abrasion-resistant additives, plastics additives, medical diagnostics, architectural window cleaning and restoration, and a variety of polishing applications, including semiconductors and optics.

While our origin is based on the creation of nanoscale metal oxide products, we have expanded our offerings to include larger but still sub-micron materials. We have developed techniques for managing attributes including particle size, shape, surface coatings, and other valuable aspects of the material. Additionally, as the format of delivery is important to customers, we have developed proprietary capabilities for dispersing our materials into both aqueous (water-based) and solvent-based liquid mediums. These capabilities allow us to better integrate with the customer s need and application.

We target markets in which we feel practical solutions may be found using nanoengineered products. We work closely with current and potential customers in these target markets to identify their material and performance requirements and market our materials to various end-use applications manufacturers. Recently developed technologies have made certain new products possible and opened potential new markets. We expect growth in end-user (manufacturing customers, including customers of customers) adoption in 2013 and beyond. Our initiatives in targeted market areas are progressing at differing rates of speed, but we have been broadly moving through testing and development cycles, and in a number of cases believe we are approaching first revenue or next stage revenue with particular customers in the industries referenced above. During 2011, for example, we launched our line of abrasion-resistant additives and have been working on related commercial development since. During 2012 our largest customer launched a new product containing our material, and we developed new solutions in polishing and energy-related areas that have been taken to potential customers or are in the process of qualification. Abrasion-resistant and polishing applications tend to have shorter testing cycles than other applications such as exterior coatings. We further believe that successful introduction of our materials with manufacturers will more likely lead to follow-on orders for other materials in their applications. Although our primary strategic focus has been the North American market, we currently sell material to customers overseas and have been working to expand our reach within foreign markets. The Company was incorporated in Illinois on November 25, 1989, and became a Delaware corporation during November 1997. The Company s common stock trades on the OTCQB marketplace under the symbol NANX. Until March 20, 2012, the Company s common stock traded on the NASDAQ Capital Market under the same symbol (NANX).

Nanophase has created a leading commercial approach to the application of its integrated materials technologies designed to deliver an optimal engineered solution for a target market or specific customer application. With respect to our products, we have complete capability from application development and laboratory samples through pilot production and, finally, commercial production currently at rates as high as hundreds of metric tons per year for individual products. We have development and application laboratories and manufacturing capacity in two locations in the Chicago area. Our manufacturing is based on Lean Six Sigma discipline and is certified to ISO 9001, American National Standard, Quality Management System Requirements; ISO 14001, American National Standard, Environmental Management System Requirements; and is compliant with current Good Manufacturing Practices (cGMP) for products under U.S. Food and Drug Administration (FDA) regulation.

Table of Contents

We have undergone a strategic shift toward penetrating key markets via interactive applications development with end-use customers in these markets. We believe this strategy leverages the applications development expertise we have cultivated over the last several years and best positions us to build direct sales to end-use customers, in addition to translating these advantages through our market partners.

Nanomaterials

Nanomaterials are generally comprised of particles (nanoparticles) that are less than 100 nanometers in diameter and these nanoparticles have a wide range of unique properties owing to their very small size. A nanometer is one-billionth of a meter, or about 100,000 times smaller in size than the width of a human hair. To give another perspective, a six-foot tall person is around two billion nanometers in height.

Nanotechnology involves manipulating the properties of materials, made up of basic elements or combinations thereof, at the 100-nanometer level or below. At this scale, the relatively small number of constituent atoms, the large proportion of these atoms on surfaces, and their confined dimensions lead materials to exhibit unique properties that can be used in many applications to benefit performance.

Nanomaterials are an important and enabling part of the diverse field of nanotechnology and are the building blocks of the Company s nanotechnology products. The ultimate performance and value of Nanophase s products in a given application is a function of nanoparticle composition, size, shape, structure, surface chemistry and coating and dispersion potential. Our technologies for engineering and manufacturing nanomaterials, and our understanding of how to make nanomaterials exhibit desirable performance characteristics in various media, result in commercial nanomaterials solutions that we believe offer superior performance in many applications.

Nanomaterials have applications in diverse global markets where they are incorporated into a process, such as semiconductor polishing, or a product, such as an industrial coating to prevent degradation from ultra-violet radiation or significantly improve wear resistance or an architectural window glass polishing solution family (NanoUltra). Multiple markets exist for our products since nanomaterials offer advantages in many applications, such as improved properties and performance, longer wear or product life, lower overall product cost, or in the development of new products or processes.

Most of the raw materials we use are commercially available. In some cases, we rely on sole-source processors of materials that utilize an array of worldwide sources for the raw materials that they process to our specifications. However, in certain cases we deal with very limited supply of certain elements, such as those classified as Rare Earth elements- specifically cerium oxide for use in polishing applications. On a worldwide basis, the vast majority of these elements are sourced from China. Due to severe export limitations imposed by China during the summer of 2010 that continued through 2011 and into 2012, the supply of all Rare Earth elements was drastically reduced from previous levels. While prices and availability improved throughout 2012, this market dynamic created significant concerns, globally, pertaining to the availability and cost of using these materials, which poses customer acceptance risk for elements of our polishing business during 2013 and beyond.

The Company s Technologies

Nanophase has created an integrated platform of commercial nanomaterial technologies that are patented, patent-pending or proprietary. These technologies are designed to deliver a nanomaterial solution for a targeted market or a specific customer application. Our platform provides flexibility and capability to engineer nanomaterials that meet a customer s performance requirements and deliver its nanomaterial solutions in a readily usable format. Our technologies are scalable and robust, having produced several hundred metric tons annually.

4

Table of Contents

Our nanomaterials platform includes two distinct manufacturing processes (PVS Plasma Vapor Synthesis and NAS - NanoArc® Synthesis) to make nanomaterials or nanoparticles. These technologies allow us to control critical nanomaterial properties (composition, size, shape, structure, surface chemistry) and engineer these attributes to meet specific application performance. Compared to other well-developed known nanoparticle processes, our plasma-produced particles are produced as nonporous, dense, discrete single crystals, which we believe possess a unique set of bulk and surface properties.

Perhaps of greater importance, we have developed proprietary technology to disperse nanoparticles in both aqueous (water-based) and several organic solvent systems. These dispersions are stable at high weight loading (typically 18-55% by weight). These aspects provide distinct market advantages. Dispersed nanomaterials are desired by many customers for use in their processes or products because of the ease of incorporation. As examples, dispersed nanomaterials are used in architectural coatings, architectural window cleaners, industrial coatings, plastic additives and semiconductor polishing. This integration flexibility allows Nanophase to serve more customers and serve them better, and is critical to its role as a solutions provider, not simply that of a materials provider.

Nanophase has also developed patented and proprietary technology to coat or surface treat nanoparticles to further engineer surface chemistry by two main processes. In many applications, such as sunscreens, this technology is vital to ensure formulation compatibility and, in some cases, optimal application performance. We deliver hundreds of metric tons of surface engineered nanoparticles to our customers annually, including coated nanomaterials that are used by major global consumer products companies for sunscreens and personal care products.

As markets continue to develop and grow, we believe that customers preferred delivery formats will often be dispersed and/or coated nanomaterials. We believe we are well-positioned with our platform of integrated commercial nanomaterial technologies to respond to this demand. We plan to maintain and advance our intellectual property and technologies to remain competitive in the fields of nanomaterials development, applications development and commercialization.

We have used our expertise in nano scale materials to develop larger particle based products that are not considered nano in various applications. Controlling aspects including particle size and shape, as well as surface chemistries, allow us to provide superior materials to the marketplace in various formats, both at the nano level and above.

We have steadily expanded our ability to commercially utilize and deliver our technologies. Through large-scale manufacturing of nanomaterials utilized in the manufacture of consumer sunscreen and personal care products and architectural coatings, we have developed production expertise that has allowed us to improve processes relating to those nanomaterials as well as processes relating to other nanomaterials. This experience has translated into additional know-how, intellectual property and advances in the technologies and manufacturing processes that reduce variable manufacturing costs and improve gross margins.

Marketing and Distribution Methods

We focus our marketing strategy on differentiated solutions that create superior value for our customers. This customer-focused strategy means we are not solely dependent upon the efforts of a market partner for future sales growth. While the partner model can be an excellent method for addressing the needs of certain markets, as we have seen in the personal care market with BASF Corporation (BASF), we have found an increasing number of cases where our ability to effectively integrate nanomaterials into a customer s specific chemistry is critical to presenting an effective solution. Given this reality, we launched a second, customer direct business model beginning in 2009 and 2010, where we deal with these customers directly and demonstrate the benefits of our solutions in their products. Our deep market knowledge of certain markets and applications has allowed us to thoroughly understand customer needs

and our products value proposition. This knowledge, combined with our

Table of Contents

applications development expertise, supports leveraging our development efforts by marketing and selling our solutions to multiple customers within each market. We work closely with each customer to develop a material solution for that entity s specific application(s), but we find that as we develop greater applications development expertise in a given area, specific applications development often becomes a routine process within Nanophase. This is where we believe our future customers will perceive the greatest value in working with Nanophase, and where we will be able to leverage our product development efforts into multiple revenue generating customer solutions.

We see this customer-focused marketing approach increasing our probability of success in many markets, allowing us to use an integrated platform of material technologies and typically reduce the total time-to-market. The more our applications development scientists and sales team work directly with customers to develop nanomaterial solutions, the more quickly and successfully we believe we will be able to grow sales.

We will continue to devote significant resources to maintaining and growing our relationships with BASF, our partner in the personal care market. For example, we developed a new product which BASF included in a 2012 commercial launch, and are very excited to support this effort. This has been a successful relationship that we expect will contribute to our future growth. BASF, which defines itself as the world s leading chemical company, with revenue in excess of $100 billion, is currently our personal care market partner. BASF is a leader in the personal care market with recognized brands, significant revenues and global sales reach. Nanophase has a long-term exclusive relationship with BASF, primarily to provide our zinc oxide-based products to be used in personal care with sunscreens and daily wear products being the dominant applications.

In 2010, Nanophase launched new products for the Architectural Windows market and for the Scratch Resistant Coatings market. In Architectural Windows, Nanophase introduced its first standalone direct-to-user products, the NanoUltra® line of architectural window cleaning and restoration products. NanoUltra® marks a change in the way the Company goes to market, as we acted on compelling market feedback that our stain removal and cleaning products could alter the professional window cleaning supplies market. We are selling these products to customers in the professional window cleaning market, primarily through distributors. As the professional market for materials is relatively small, our strategy has been to leverage the introduction of the professional window cleaning and restoration market into deployment within the much larger consumer products market.

In the Abrasion Resistant Additives market, the newest additions to the NanoArc® product line help formulators meet the rigorous scratch and mar resistance requirements of very thin, highly transparent coatings. These products are designed for ultraviolet (UV) cured coatings used on electronics and wood, and in a variety of graphic arts applications. This comprehensive product offering, featuring various sized nano and sub-micron alumina dispersed in commonly used monomers, significantly improves the scratch and wear resistance of coatings used to protect a wide variety of products, from cell phones and computers to furniture and high sheen magazine covers, providing improved durability while preserving high optical clarity and gloss. We formally launched this product line at the European Coatings Show during early 2011 and have been developing customer relationships since this commercial launch.

In addition to the personal care applications of our market partner, Nanophase s products are used in a variety of other applications, including architectural coatings, polishing applications (including optical glass and CMP), plastics additives, medical diagnostics, textiles and graphic arts, energy control applications, and others.

Because our technology can be applied to a wide variety of applications, we focus our efforts on only a handful of applications to gain a depth of knowledge and leverage our learning curve. If we find a unique application outside of our core markets that does not require significant development resources then we may pursue it as opportunistic business. We believe this focused approach has been directly responsible for the increase in our pipeline of well-defined customer opportunities over the past two years, and will contribute to a higher success rate for related

opportunities.

Table of Contents

Technology and Engineering

Our efforts in research and development, process engineering and advanced engineering groups are focused in three major areas: 1) application development for our products; 2) creating or obtaining additional core material technologies and/or materials that have the capability to serve multiple markets; and 3) continuing to improve our core technologies to improve manufacturing operations and reduce costs.

Most of the research and development at Nanophase is directly related to applications development. We endeavor to either meet specific customer needs or to develop applications solutions to address unmet needs in a particular market where we believe our materials will offer a distinct performance advantage. We believe that aggressively pursuing applications in targeted areas will help Nanophase compete as a technical and commercial innovator using its materials expertise, and more importantly, become perceived as a solutions provider by our customers and not simply as another materials supplier.

Nanophase s total research and development expense, which includes all expenses relating to the technology and advanced engineering groups, during the years ended December 31, 2012 and 2011, was $1,626,669 and $1,737,201, respectively. This represents the Company s share of these expenses only and does not take into account amounts spent by any of our customers in support of new product development. The Company s future success will depend in large part upon its ability to develop products which bring a high degree of value to its customers products. Through the three-year period ended December 31, 2012, the Company has had cumulative research and development expenses of approximately $5 million and cumulative expenditures on equipment and leasehold improvements of approximately $0.5 million.

Manufacturing Operations

The Company has manufacturing capacity based in two locations in the Chicago area. At each of these facilities, Nanophase is able to develop and supply nanomaterials in quantities ranging from grams to metric tons. Our facilities are certified to ISO 9001:2008 international standards and are cGMP compliant for applicable bulk pharmaceutical manufacturing. We are also in the process of registering some of the chemicals we ship to customers in Europe pursuant to the European Chemical Agency s regulations issued to date pertaining to Registration Evaluation and Authorization of Chemicals (REACH ; we have registered Zinc Oxide under REACH and filed preliminary registrations for other materials). Our facilities are also certified to the international standard for environmental management, ISO 14001:2004.

Our operations employ a cellular, team-based manufacturing approach, where workers operate in work cells, under a lean manufacturing environment to continuously advance and improve production capabilities. We have also developed a highly flexible workforce that has been cross-trained to allow it to be employed broadly across our manufacturing processes. Our manufacturing approach and targeted engineering actions have resulted in continuing process innovations and improvements that have reduced the variable manufacturing cost significantly over the past several years.

We are committed to a lean manufacturing approach, to the extent possible given a certain measure of irregular demand, where we are able to reduce excess labor and manage the lowest practical inventory and supply levels in order to minimize working capital demands. This approach complements two of the Company s major operational goals - (1) to increase output without adding unnecessarily to existing equipment and (2) to continually reduce production costs while consistently producing high quality products.

7

Table of Contents

Intellectual Property and Proprietary Rights

Nanophase relies on a combination of patent, trademark, copyright, trade secret and other intellectual property laws, nondisclosure agreements and other protective measures to protect its intellectual property. In addition to obtaining patent and trademarks based on the Company s inventions and products, Nanophase may also license certain third-party patents from time-to-time to expand its technology base.

As of the date of this filing, Nanophase owns 13 U.S. patents and 2 pending U.S. patent applications. Nanophase also owns 33 foreign patents and patent applications consisting of 29 issued or allowed foreign patents and 4 pending foreign patent applications. All of the pending and owned foreign patents are counterparts to domestic filings covering its platform of nanotechnologies. The Company s oldest issued patents will begin to expire in 2013.

Nanophase has licensed its PVS technology for specific markets in certain geographic regions to CIK NanoTek (formerly C.I. Kasei), a subsidiary of Itochu Corporation. Under this license agreement, the Company earns royalties on net sales of manufactured products containing nanocrystalline materials. The license agreement also provides for minimum royalty payments to maintain exclusivity. The license agreement will expire on March 31, 2013. Upon expiration of the license agreement, and pursuant to a subsequent agreement scheduled to take effect on April 1, 2013, our relationship is to become non-exclusive and royalty-free.

Competition

Within each of its targeted markets and product applications, Nanophase faces potential competition from advanced materials and chemical companies, and suppliers of traditional materials. In many markets, the actual or potential competitors are larger and more diversified than we are; however, we believe we focus in market segments and opportunities where our materials and related technologies are superior to those of our competitors, often due to our ability to produce highly engineered products to meet specific performance requirements and develop nanomaterial solutions for customers specific applications.

With respect to traditional suppliers, we may compete against lower priced traditional materials for certain customer applications. In some product or process applications the benefits of using nanomaterials do not always outweigh their typically higher costs.

With respect to larger producers of nanomaterials, while many of these producers do not currently offer directly competitive products, these companies may have greater financial and technical resources, larger research and development staffs, and greater manufacturing and marketing capabilities, and could compete directly against Nanophase. In addition, the number of development-stage companies involved in nanocrystalline materials continues to grow on a global basis, posing increasing competitive risks. Many of these companies are associated with university or national laboratories and use chemical and physical methods to produce nanocrystalline materials. We believe that most of these companies are engaged primarily in funded research and not commercial production; however, they may represent competitive risks in the future. Some development-stage companies, especially in other countries, receive significant government assistance or enjoy other benefits due to their location. We anticipate that foreign competition may play a greater role in the nanomaterials arena in the future.

We believe that our nanomaterial technologies and manufacturing platforms are strong. We believe we are well-positioned with our platform of integrated commercial nanomaterial technologies and track record of technology improvement and evolution.

8

Table of Contents

Governmental Regulations, Including Climate Change

The manufacture and use of certain of the products that contain the Company s nanocrystalline materials are subject to governmental regulations. As a result, we are required to adhere to the cGMP requirements of the FDA and similar regulations that include testing, control and documentation requirements enforced by periodic inspections. We are also in the process of registering some of the chemicals we ship to customers in Europe in compliance with the European Chemical Agency s regulations issued to date pertaining to REACH (to date, we have registered Zinc Oxide under REACH and filed preliminary registrations for other materials).

Nanophase is committed to environmental health and safety (EH&S). We believe we comply with all applicable exposure limit standards issued by OSHA. Because nanotechnology remains an emerging and evolving science, there are no currently accepted standards, measurements or personal protective equipment available that are specific to nanoparticle safety. Accordingly, we rely on general chemical safety practices to identify safe personal protective equipment and appropriate handling protocols. We believe that Nanophase has taken a leadership position on EH&S in our operations and has internal and external review and monitoring of its practices.

In addition, our facilities and operations are subject to the plant and laboratory safety requirements of various environmental and occupational safety and health laws. We believe we are in compliance with all such laws and regulations, and to date, those regulations have not materially restricted or impeded operations. Further, we believe our processes to be highly efficient, generating very low levels of waste and emissions. For this reason, we do not view issues surrounding climate change and any currently foreseeable related regulations as materially impacting our business and financial statements, beyond any inestimable impact on the macro-economic environment.

Nanophase has taken a responsible, proactive approach to EH&S by implementing appropriate procedures and processes to have its facilities certified to ISO 14001, American National Standard, Environmental Management System Requirements. We are also involved with leading industry groups that are defining nanomaterial standards and protocols. These currently include the ASTM International Committee on Nanotechnology, Nanoscale Materials Stewardship Program under the Toxic Substances Control Act, and the US TAG to ISO TC 229 Nanotechnology committee managed by the American National Standards Institute committee (ANSI). We also participate in FDA reviews relative to cosmetic applications. We have a full-time, advanced degreed professional who spends a significant amount of time managing governmental regulation compliance and EH&S. We believe that our Company has an exemplary safety record.

Employees

On December 31, 2012, we had a total of 46 full-time employees, 8 of whom hold advanced degrees. We have no collective bargaining agreements and believe that we have a strong relationship with our employees.

Backlog

We do not believe that a backlog as of any particular date is indicative of future results. Our sales are primarily pursuant to purchase orders for delivery of our nanomaterials. Nanophase has some agreements that give customers the right to purchase a specific quantity of nanomaterials during a specified time period. These agreements, however, do not obligate the customers to purchase any minimum quantity of such nanomaterials. The quantities actually purchased by the customer, as well as the shipment schedules, are frequently revised during the agreement term to reflect changes in the customer s needs. For these reasons we do not believe that such agreements are meaningful for determining backlog amounts.

9

Table of Contents

Business Segment and Geographical Information

Our operations comprise a single business segment and all of our long-lived assets are located within the United States. See Note 13 to the accompanying Financial Statements for additional information.

Key Customers

A limited number of key customers account for a substantial portion of the Company s commercial revenue. In particular, revenue from three customers (one of which is also a market partner) - (1) our partner BASF, (2) our largest customer in polishing applications and (3) our largest customer in industrial coating ingredients - constituted approximately 67%, 9% and 5%, respectively, of our 2012 total revenue. Many of our customers are significantly larger than we are and, therefore, may be able to exert a high degree of influence over us. While our agreements with BASF are long-term agreements, they may be terminated by BASF under certain circumstances with reasonable notice and do not provide any guarantees that BASF will buy our products. The loss of one of our largest customers or the failure to attract new customers could have a material adverse effect on the Company s business, results of operations and financial condition. Due to the high concentration of sales to a limited number of customers, we have aggressively pursued a significant number of new customers, frequently smaller entities, through our customer direct business model. To the extent we are successful in adding a large number of customers through this model and maintaining or expanding our existing partners, we believe we will be able to best manage the risks associated with customer concentration.

Forward-Looking Statements

Nanophase wants to provide investors with more meaningful and useful information. As a result, this Annual Report on Form 10-K (the Form 10-K) contains certain forward-looking statements , as defined in Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act). These statements reflect the Company s current expectations of the future results of its operations, performance and achievements. Forward-looking statements are covered under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. The Company has tried, wherever possible, to identify these statements by using words such as anticipates , believes , estimates , expec plans , intends and similar expressions. These statements reflect management s current beliefs and are based on information now available to it. Accordingly, these statements are subject to certain risks, uncertainties and contingencies that could cause the Company s actual results, performance or achievements in 2013 and beyond to differ materially from those expressed in, or implied by, such statements. These risks, uncertainties and factors include, without limitation: our ability to become profitable despite the losses we have incurred since our incorporation; our dependence on our principal customers and the terms of our supply agreement with BASF which could trigger a requirement to transfer technology and/or sell equipment to that customer; our potential inability to obtain working capital when needed on acceptable terms or at all; our ability to obtain materials at costs we can pass through to our customers, including Rare Earth elements, specifically cerium oxide; uncertain demand for, and acceptance of, the Company s nanocrystalline materials; the Company s manufacturing capacity and product mix flexibility in light of customer demand; the Company s limited marketing experience; changes in development and distribution relationships; the impact of competitive products and technologies; the Company s dependence on patents and protection of proprietary information; the ability of the Company to provide an appropriate electronic venue for its securities; the impact of any potential new governmental regulations that could be difficult to respond to or costly to comply with; and the resolution of litigation in which the Company may become involved. Readers of this Form 10-K should not place undue reliance on any forward-looking statements. Except as required by federal securities laws, the Company undertakes no obligation to update or revise these forward-looking statements to reflect new events or uncertainties.

Table of Contents

Investor Information

The Company is subject to the informational requirements of the Exchange Act and, accordingly, files periodic reports, proxy statements and other information with the Securities and Exchange Commission (the SEC). Such reports, proxy statements and other information may be obtained by visiting the Public Reference Room of the SEC at 100 F Street, N.E., Washington, DC 20549 or by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an Internet site **(http://www.sec.gov)** that contains reports, proxy and information statements and other information regarding issuers that file electronically.

Financial and other information may also be accessed at the Company s website. The address is www.nanophase.com. The Company makes available, free of charge, copies of its annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after filing such material electronically with, or otherwise furnishing it to, the SEC, and intends to make all such reports and amendments to reports available free of charge on its website. We have included our website address throughout this Form 10-K as textual references only. The information contained on our website is not incorporated into this Form 10-K.

Item 1A. Risk Factors

The following factors, among others, could cause actual results to differ materially from those contained in forward-looking statements made in this Annual Report on Form 10-K and presented elsewhere by management from time to time. Such factors may have a material adverse effect on our business, financial condition, and results of operations and you should carefully consider them. Additional risks and uncertainties not presently known to us or which are currently not believed to be material may also affect our actual results. Because of these and other factors, past performance should not be considered an indication of future performance.

We have a history of losses that may continue in the future.

We have incurred net losses in each year since our inception, with net losses of $3.4 million in 2011 and $2.4 million in 2012. As of December 31, 2012, we had an accumulated deficit of $88.2 million and expect to incur a loss on an annual basis during 2013. We believe that our business depends, among other things, on our ability to significantly increase revenue. If revenue fails to grow at anticipated rates or if operating expenses increase without a commensurate increase in revenue, or if we fail to adjust operating expense levels accordingly, then the imbalance between revenue and operating expenses will negatively impact our cash balances and our ability to achieve profitability in future periods.

We depend on a few major customers for a high percentage of our sales, and the loss of orders from a significant customer could cause a decline in revenue and/or increases in the level of losses incurred.

Sales to our customers are executed pursuant to purchase orders and long-term supply contracts; however, customers can cease doing business with us at any time with limited advance notice. It is possible that a significant portion of our future sales may remain concentrated within a limited number of strategic customers. We may not be able to retain our strategic customers, such customers may cancel or reschedule orders, or in the event of canceled orders, such orders may not be replaced by other sales or by sales that are on as favorable terms. In addition, sales to any particular customer may fluctuate significantly from quarter to quarter, which could affect our ability to achieve anticipated revenues on a quarterly basis.

Sales to our three largest customers accounted for 54%, 21% and 7%, respectively, of our total revenue in 2011, and 67%, 9% and 5%, respectively, of our total revenue in 2012.

We plan to expand both our marketing and business development efforts and our production efficiency in order to address the issues of our dependence upon a limited amount of customers, enhancement of gross profit and operating cash flows, and the achievement of profitability. Given the nature of our products, and the fact that markets for them are not yet fully developed, it is difficult to accurately predict when additional large customers will materialize. Going forward, our margins, as a percentage of revenue, will be dependent upon revenue mix, revenue volume, raw materials pricing, and our ability to continue to cut costs. The extent of the growth in revenue volume and the related gross profit that this revenue generates will be the main drivers in generating positive operating cash flows and, ultimately, net income.

Table of Contents

Any downturn in the product markets served by us would harm our business.

A majority of our products are incorporated into products such as personal care applications including sunscreens, architectural coatings, polishing slurries, and to a lesser extent, medical diagnostics, abrasion-resistant coatings and other products. These markets have from time to time experienced cyclical, depressed business conditions, often in connection with, or in anticipation of, a decline in general economic conditions. These industry downturns often result in reduced product demand and declining average selling prices. Our business would be harmed by a continuation of the existing downturn and/or any future downturns in the markets that we serve.

Our products often have long adoption cycles, which could make it difficult to achieve market acceptance and makes it difficult to forecast revenues.

Due to their often novel characteristics and potential unfamiliarity with them that exists in the marketplace, our nanomaterials may require longer adoption cycles than existing materials technologies, to the point that adoption cycles are typically one to five years. Our nanomaterials have to receive appropriate attention within any potential customer s organization, and then they must be tested to prove a performance advantage over existing materials, typically on a systems-cost basis. Once we have proven initial commercial viability, pilot scale production runs must be completed by the customer, followed by further testing. Once production-level commercial viability is established, then our nanomaterials can be introduced, often to a downstream marketplace that needs to be familiarized with them. If we are unable to demonstrate to our potential customers the performance advantages and economic value of our nanomaterials over existing and competing materials and technologies, we will be unable to generate significant sales. Our long adoption cycle makes it difficult to predict when sales will occur.

We frequently depend on collaborative development relationships with our customers. We also have relationships with distributor entities in certain market areas (such as personal care including sunscreens) and geographic areas where our limited direct sales force would not be effective. If we are unable to initiate or sustain such collaborative relationships or if the terms of our relationships with distributors in these market and geographic areas limit the distribution of our products, or if our strategic partners are unable to distribute our products efficiently, then we may be unable to successfully develop, manufacture or market our current and future nanomaterials or applications.

We have established, and will continue to pursue, strategic relationships with many of our customers and do not have a substantial direct sales force or an established distribution network (other than distribution arrangements for research samples). Through these relationships, we seek to develop new applications for our nanomaterials and share development and manufacturing resources. We also seek to coordinate the development, manufacture and marketing of our nanomaterials products, particularly as a result of our selling additives that must be integrated into complete formulations by the customer. Future success will depend, in part, on our continued relationships with these customers and our ability to enter into similar strategic relationships with other customers. Our customers may not continue in these collaborative development relationships, may not devote sufficient resources to the development or sale of our materials or may enter into strategic development relationships with our competitors. These customers may also require a share of control of these collaborative programs. While less prevalent than in the past, some of our agreements with these customers limit our ability to license our technology to others and/or limit our ability to engage in certain product development or marketing activities with others. These relationships generally can be terminated unilaterally by customers.

If we are unable to initiate or sustain such collaborative relationships or if the terms of these relationships materially limit our access to distribution channels for our products, then we may be unable to successfully develop, manufacture or market our current and future nanomaterials or applications.

If commodity metal prices increase at such a rate that we are unable to recover lost margins on a timely basis or that our products became uncompetitive in their current marketplaces, our financial and liquidity position and results of operations would be substantially harmed.

Many of our significant raw materials come from commodity metal markets that may be subject to rapid price increases. While we generally are able to pass a significant portion of commodity price-related increases on to our customers, it is possible that, given our limited customer base and the limited control we have over it, commodity metal prices could increase at such a rate that could hinder our ability to recover lost margins from our customers. It is also possible that such drastic cost increases could render some of our materials uncompetitive in their current marketplaces when considered relative to other materials on a cost benefit basis. If either of these potential results occurred, our financial and liquidity position and results of operations would be substantially harmed.

Table of Contents

Beginning in 2010, the availability of one of the materials we use, cerium oxide, a rare earth material, was constrained by a change in Chinese export policy, causing a dramatic increase in material cost. New sources of materials, a lack of further restrictions, and other factors have reduced the availability and cost issues substantially from their 2011 peak, but the cost of this material remains significantly higher than it was during the first half of 2010. While cerium oxide continues to be used for many applications, and polishing applications in our case, customers are more inclined to look for alternative solutions today as they consider the supply (including cost) risk of this material. Failure of customers to either adopt solutions utilizing cerium oxide or continue to use solutions containing cerium oxide could harm one of our business areas, and thus negatively impact our financial and liquidity position and results of operations.

Protection of our intellectual property is limited and uncertain.

Our intellectual property is important to our business. We seek to protect our intellectual property through patent, trademark, trade secret protection and confidentiality or license agreements with our employees, customers, suppliers and others. Our means of protecting our intellectual property rights in the United States or abroad may not be adequate and others, including our competitors, may use our proprietary technology without our consent. We may not receive the necessary patent protection for any applications pending with the U.S. Patent and Trademark Office (USPTO) and any of the patents that we currently own or license may not be sufficient to keep competitors from using our materials or processes. In addition, patents that we currently own or license may not be held valid if subsequently challenged by others and others may claim rights in the patents and other proprietary technology that we own or license. Additionally, others may have already developed or may subsequently develop similar products or technologies without violating any of our proprietary rights. If we fail to obtain or maintain patent protection or preserve our trade secrets, we may be unable to effectively compete against others offering similar products and services. In addition, if we fail to operate without infringing the proprietary rights of others or lose any license to technology that we currently have or will acquire in the future, we may be unable to continue making the products that we currently make.

Moreover, at times, attempts may be made to challenge the prior issuance of our patents. Furthermore, litigation may be necessary to enforce our intellectual property rights, to protect our trade secrets, to determine the validity and scope of the proprietary rights of others, or to defend against claims of infringement or invalidity. Such litigation could result in substantial costs and diversion of resources and could harm our business, operating results and financial condition. Such litigation might occur with parties that have substantially greater resources, and thus more capability to engage and continue litigation. In addition, if others assert that our technology infringes their intellectual property rights, resolving the dispute could divert our management team and financial resources.

Due to the expanding length of time required in order to obtain a patent, and the inherent ongoing risks of the protections truly provided by any patent, we made a decision during 2008 that we could no longer place a value on these intangible assets. In the future, we may license certain of our intellectual property, such as trademarks, to third parties. While we would attempt to ensure that any licensees maintain the quality and value of our brand, these licenses might diminish this quality and value.

If a catastrophe strikes either of our manufacturing facilities or if we were to lose our lease for either facility due to non-renewal or other unforeseen events, we may be unable to manufacture our materials to meet customers demands.

Our manufacturing facilities are located in Romeoville and Burr Ridge, Illinois. These facilities and some of our manufacturing and testing equipment would be difficult to replace in a timely manner. Therefore, any material disruption at one of our facilities due to a natural or man-made disaster or a loss of lease due to non-renewal or other unforeseen events could have a material adverse effect on our ability to manufacture products to meet customers

demands. While we maintain property insurance, this insurance may not adequately compensate us for all losses that we may incur in the event of a material interruption in our business.

If we are unable to expand our production capabilities to meet unexpected demand, we may be unable to manage our growth and our business would suffer.

Our success will depend, in part, on our ability to manufacture nanomaterials in significant quantities, with consistent quality and in an efficient and timely manner. We expect to be able to expand our current facilities or obtain additional facilities in the future, and outsource production aspects as necessary, available and appropriate, in order to respond to unexpected demand for existing materials or for new materials that we do not currently make in quantity. Such unplanned demand, if it resulted in rapid expansion, could create a situation where growth could become difficult to manage, which could cause us to lose potential revenue.

Table of Contents

Our industry is experiencing rapid changes in technology. If we are unable to keep pace with these changes, our business will not grow.

Rapid changes have occurred, and are likely to continue to occur, in the development of advanced materials and processes. Our success will depend, in large part, upon our ability to keep pace with advanced materials technologies, industry standards and market trends and to develop and introduce new and improved products on a timely basis. We expect to commit substantial resources to develop our technologies and product applications and, in the future, to expand our commercial manufacturing capacity as volume grows. Our development efforts may be rendered obsolete by the research efforts and technological advances of others and other advanced materials may prove more advantageous than those we produce.

The markets we serve are highly competitive, and if we are unable to compete effectively, then our business will not grow.

The advanced materials industry is new, rapidly evolving and intensely competitive, and we expect competition to intensify in the future. The market for materials having the characteristics and potential uses of our nanomaterials is the subject of intensive research and development efforts by both governmental entities and private enterprises around the world. We believe that the level of competition will increase further as more product applications with significant commercial potential are developed. The nanomaterials product applications that we are developing will compete directly with products incorporating both conventional and advanced materials and technologies. While we are not currently aware of the existence of commercially available competitive products with the same attributes as those we offer, other companies may develop and introduce new or competitive products. Our competitors may succeed in developing or marketing materials, technologies and better or less expensive products than the ones we offer. In addition, many of our potential competitors have substantially greater financial and technical resources, and greater manufacturing and marketing capabilities than we do. If we fail to improve our current and potential nanomaterials product applications at an acceptable price, or otherwise compete with producers of conventional materials, we will lose market share and revenue to our competitors.

We may need to raise additional capital in the future. If we are unable to obtain adequate funds, we may be required to delay, scale-back or eliminate some of our manufacturing and marketing operations or we may need to obtain funds through arrangements on less favorable terms or we may be required to sell key production equipment to our largest customer.

We expect to expend resources on research, development and product testing, and in expanding current capacity or capability for new business. In addition, we may incur significant costs in preparing, filing, prosecuting, maintaining and enforcing our patents and other proprietary rights. If necessary, we may seek funding through public or private financing and through contracts with governmental entities or other companies. Additional financing may not be available on acceptable terms or at all. If we are unable to obtain adequate funds, we may be required to delay, scale-back or eliminate some of our manufacturing and marketing operations or we may need to obtain funds through arrangements on less favorable terms. If we obtain funding on unfavorable terms, we may be required to relinquish rights to some of our intellectual property.

To raise additional funds in the future, we would likely sell our equity or debt securities or enter into loan agreements. To the extent that we issue debt securities or enter into loan agreements, we may become subject to financial, operational and other covenants that we must observe. In the event that we were to breach any of these covenants, then the amounts due under such loans or debt securities could become immediately payable by us, which could significantly harm us. To the extent that we sell additional shares of our equity securities, our stockholders may face economic dilution and dilution of their percentage of ownership.

We currently have a supply agreement with BASF that contains provisions which could potentially result in a mandatory license of technology and/or sale of production equipment to BASF, providing capacity sufficient to meet BASF s production needs. Under our supply agreement with BASF, a triggering event also would occur:

- if our earnings for a twelve month period ending with our most recently published quarterly financial statements are less than zero and our cash, cash equivalents and certain investments are less than $1,000,000, or
- upon the acceleration of any debt maturity having a principal amount of more than $10,000,000, or if we become insolvent as defined in the supply agreement.

In the event of a triggering event where we are required to sell to BASF production equipment providing capacity sufficient to meet BASF s production needs, the equipment would be sold at the greater of 30% of the original book value of such equipment, and any associated upgrades to it, or 115% of the equipment s net book value.

Table of Contents

If we were determined to have materially breached certain other provisions of our supply agreement with BASF, we similarly could be subject to a triggering event that potentially could result in a mandatory license of technology and/or sale of certain production equipment to the customer.

We believe that our current cash balances and other assets that might be monetized if and as needed will be sufficient to avoid the first triggering event under the BASF supply agreement for the foreseeable future, and because we are debt-free, the second triggering event is not currently applicable to us.

If a triggering event were to occur and BASF elected to proceed with the license and related sale mentioned above, we would lose both significant revenue and the ability to generate significant revenue to replace that which was lost in the near term. Replacement of necessary equipment that would be purchased and removed by the customer pursuant to this triggering event could take in excess of 12 months. Any additional capital outlays required to rebuild capacity would probably be greater than the proceeds from the purchase of the assets pursuant to our agreement with BASF. This potential shortfall might put us in a position where it would be difficult to secure additional funding given what would then be an already tenuous cash position. Such an event would also likely result in the loss of many of our key staff and line employees due to economic realities. We believe that our employees are a critical component of our success and would be difficult to quickly replace and train. Upon the occurrence of such an event, we might not be able to hire and retrain skilled employees given the stigma relating to such an event and its impact on us. We might elect to effectively reduce our size and staffing to a point where we could remain a going concern in the near term.

We depend on key personnel, and their unplanned departure could harm our business.

Our success will depend, in large part, upon our ability to attract and retain highly qualified research and development, management, manufacturing, marketing and sales personnel on favorable terms. Due to the specialized nature of our business, we may have difficulty locating, hiring and retaining qualified personnel on favorable terms. If we were to lose the services of any of our key executive officers or other key personnel, or if we are unable to attract and retain other skilled and experienced personnel on acceptable terms in the future, or if we are unable to implement a succession plan to prepare qualified individuals to assume key roles upon any loss of our key personnel, then our business, results of operations and financial condition could be materially harmed.

We face potential product liability risks which could result in significant costs that exceed our insurance coverage, damage our reputation and harm our business.

We may be subject to product liability claims in the event that any of our nanomaterials product applications are alleged to be defective or cause harmful effects to humans or physical environments. Because our nanomaterials are used in other companies products, to the extent our customers become subject to suits relating to their products, these claims may also be asserted against us. We may incur significant costs including payment of significant damages, in defending or settling product liability claims. Although we maintain insurance for product liability claims, our coverage may not prove sufficient. Even if a suit is without merit and regardless of the outcome, claims can divert management time and attention, injure our reputation and adversely affect demand for our nanomaterials.

We are subject to governmental regulations. The costs of compliance and liability for noncompliance with governmental regulations could have a material adverse effect on our business, results of operations and financial condition.

Current and future laws and regulations may require us to make substantial expenditures for preventive or remedial action. Our operations, business or assets may be materially and adversely affected by governmental interpretation and enforcement of current or future environmental, health and safety laws and regulations. In addition, our coating and

dispersion operations pose a risk of accidental contamination or injury. The damages in the event of an accident or the costs to prevent or remediate a related event could exceed both the amount of our liability insurance and our resources or otherwise have a material adverse effect on our business, results of operations and financial condition.

In addition, both of our facilities and all of our operations are subject to the plant and laboratory safety requirements of various occupational safety and health laws. We believe we have complied in all material respects with governmental regulations applicable to us. However, we may have to incur significant costs in defending or settling future claims of alleged violations of governmental regulations and compliance with these regulations may materially restrict or impede our operations in the future. In addition, our efforts to comply with or contest any regulatory actions may distract personnel or divert resources from other important initiatives.

Table of Contents

The manufacture and use of certain products that contain our nanomaterials are subject to extensive governmental regulation, including regulations promulgated by the FDA, the U.S. Environmental Protection Agency and OSHA. As a result, we are required to adhere to the requirements of the regulations of governmental authorities in the United States and other countries, including regulations issued to date pertaining to REACH. These regulations could increase our cost of doing business and may render some potential markets prohibitively expensive. In addition, new rules or regulations could impose restrictions or prohibitions on certain materials being marketed with or incorporated into certain applications, which could limit our ability to sell our nanomaterials in the marketplace.

A large investor and his affiliates have significant influence on all matters requiring stockholder approval because they beneficially own a large percentage of our common stock and they may vote their shares of common stock in ways with which other stockholders disagree.

As of December 31, 2012, Bradford T. Whitmore, together with his affiliates, Grace Brothers, Ltd. and Grace Investments, Ltd., beneficially owned approximately 38% of the outstanding shares of our common stock. The current ownership position of Mr. Whitmore and his affiliates could delay, deter or prevent a change of control or adversely affect the price that investors might be willing to pay in the future for shares of our common stock. The interests of Mr. Whitmore and his affiliates may differ from the interests of our other stockholders and they may vote the common stock they beneficially own in ways with which our other stockholders disagree. R. Janet Whitmore, one of our directors since 2003, is the sister of Mr. Whitmore.

We have never paid dividends.

We currently intend to retain earnings, if any, to support our growth strategy. We do not anticipate paying dividends on our stock in the foreseeable future.

Sales, or the availability for sale, of substantial amounts of our common stock could adversely affect the value of our common stock.

No prediction can be made as to the effect, if any, that future sales of our common stock, or the availability of our common stock for future sales, will have on the market price of our common stock. Sales of substantial amounts of our common stock in the public market and the availability of shares for future sale could adversely affect the prevailing market price of our common stock. This in turn could impair our future ability to raise capital through an offering of our equity securities.

There may be future sales or other dilution of our equity, which may adversely affect the market price of our common stock.

We are not restricted from issuing additional shares of common stock, including any securities that are convertible into or exchangeable for, or that represent the right to receive, common stock. The market price of our common stock could decline as a result of future sales of our common stock or the perception that such sales could occur.

Provisions in our certificate of incorporation, our by-laws, and Delaware law could make it more difficult for a third party to acquire us, discourage a takeover, and adversely affect existing stockholders.

Our certificate of incorporation, our by-laws and the Delaware General Corporation Law (the DGCL) contain provisions that may have the effect of making more difficult, delaying or deterring attempts by others to obtain control of our Company, even when these attempts may be in the best interests of stockholders. These include provisions on our maintaining a classified Board of Directors and limiting the stockholders powers to remove directors or take

action by written consent instead of at a stockholders meeting. Our certificate of incorporation also authorizes our Board of Directors, without stockholder approval, to issue one or more series of preferred stock, which could have voting and conversion rights that adversely affect or dilute the voting power of the holders of common stock. The DGCL also imposes conditions on certain business combination transactions with interested stockholders.

These provisions and others that could be adopted in the future could deter unsolicited takeovers or delay or prevent changes in our control or management, including transactions in which stockholders might otherwise receive a premium for their shares over then current market prices. These provisions may also limit the ability of stockholders to approve transactions that they may deem to be in their best interests.

Table of Contents

Item 1B. Unresolved Staff Comments

There are currently no open comments from the SEC Staff.

Item 2. Properties

Nanophase operates two facilities in the Chicago suburbs - a 36,000 square-foot production, research and headquarters facility in Romeoville, Illinois and a 20,000 square-foot production facility in Burr Ridge, Illinois. The Company also leases a 9,000 square-foot offsite warehouse in the vicinity of the Romeoville facility.

The Company s manufacturing operations in Burr Ridge are certified under ISO 9001:2008, and we believe that our manufacturing operations are within the cGMP requirements of the FDA for products that require such compliance. Our facilities are also ISO 14001:2004 certified which is the international standard for environmental management. The Burr Ridge facility has a quality control laboratory designed for the dual purposes of validating operations to cGMP and ISO standards and production process control. This laboratory is equipped to handle many routine analytical and in-process techniques that are currently required.

The Romeoville facility houses the Company s headquarters, advanced engineering, manufacturing (including nanoparticle coating, nanoparticle dispersion and pilot-scale manufacturing) and three applications development laboratories. All Romeoville manufacturing processes are certified to ISO 9001:2008 and ISO 14001:2004, and we believe that the manufacturing of nanoparticle coating used for sunscreens and personal care is in compliance with the cGMP requirements of the FDA.

Nanophase leases its Romeoville and Burr Ridge facilities. On October 18, 2005, Nanophase entered into a Lease Amendment amending its then-current lease for its facility in Romeoville, Illinois, which, among other things, extended the term of such lease through December 31, 2015 (with our option to extend the term for up to two additional five-year periods). Nanophase renewed its Burr Ridge facility lease in September 2010, extending the terms through August 2014 (with our option to extend the term for up to three additional one-year periods). In August of 2010, we also renewed our lease for our offsite warehouse through August 2013.

We believe that our leased facilities provide sufficient capacity to fulfill current known customer demand as well as allow for the creation of substantial additional space to enable expansion of key production processes. We believe additional facilities could be obtained in the area at competitive prices if necessary to support growth. We believe that our capital expenditures made in 2012, and projected for 2013, will support currently anticipated demand from existing customers. Our actual future capacity requirements will depend on many factors, including new and potential customer acceptance of our current and potential nanomaterials and product applications, both expected and currently unplanned growth from existing customers, continued progress in our research and development activities and product testing programs and the magnitude of these activities and programs.

Table of Contents

Item 3. Legal Proceedings

None.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information; Holders; Dividends

The Company s common stock is traded on the OTCQB marketplace, operated by OTC Markets Group, since voluntarily delisting from the NASDAQ Capital Market on March 20, 2012. The Company s symbol, NANX , did not change as a result of this venue transfer. The following table sets forth, for the periods indicated, the range of high and low sale prices for the common stock on the NASDAQ Capital Market (or NASDAQ Global Market prior to June 2011):

	High	Low
Fiscal year ended December 31, 2012:		
First Quarter	$ 0.77	$ 0.15
Second Quarter	0.60	0.26
Third Quarter	0.39	0.27
Fourth Quarter	0.42	0.27
Fiscal year ended December 31, 2011:		
First Quarter	$ 1.76	$ 1.16
Second Quarter	1.45	1.16
Third Quarter	1.24	0.60
Fourth Quarter	0.80	0.38

On March 15, 2013, the last reported sale price of our common stock was $0.50 per share, and there were approximately 115 holders of record of the common stock.

The Company has never declared or paid any cash dividends on its common stock and does not currently anticipate paying any cash dividends or other distributions on its common stock in the foreseeable future. The Company intends instead to retain any future earnings for reinvestment in its business. Any future determination to pay cash dividends will be at the discretion of the Company s Board of Directors and will be dependent upon the Company s financial condition, results of operations, capital requirements and such other factors deemed relevant by the Board of Directors.

Securities Authorized for Issuance under Equity Compensation Plan

The following table gives information about our common stock that may be issued upon the exercise of options and rights under all of our existing compensation plans on December 31, 2012, including the 2001 Equity Compensation

Plan and the 2010 Equity Compensation Plan (the 2010 Equity Plan). The 2010 Equity Plan replaced the 2004 Equity Compensation Plan (the 2004 Plan), the 2005 Non-Employee Director Restricted Stock Plan (as amended, the 2005 Plan), and the Amended and Restated 2006 Stock Appreciation Rights Plan (the 2006 Plan).

Table of Contents

Plan Category	(a) Number of securities to be issued upon exercise of outstanding options, warrants and rights	(b) Weighted - average exercise price of outstanding options, warrants and rights	(c) Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
Plans Approved by Shareholders	1,951,537	$ 1.69	1,277,138
Plans Not Approved by Shareholders	None	$	None

Item 6. Selected Financial Data

Not required for a smaller reporting company.

Item 7. Management s Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis should be read in conjunction with risks discussed in Part I, Item 1A, Risk Factors of this Form 10-K, and the financial statements and related notes thereto appearing elsewhere in this Form 10-K. When used in the following discussions, the words anticipates, believes, estimates, expects, plans, intends and similar expressions are intended to identify forward-looking statements. Such statements are subject to certain risks, uncertainties and contingencies that could cause actual results, performance or achievements to differ materially from those expressed in, or implied by, such statements. See the Forward Looking Statements section in Part 1, Item 1, of this Form 10-K.

Overview

Nanophase is an advanced materials and applications developer and commercial manufacturer with an integrated family of materials technologies. Nanophase produces engineered nano and sub-micron materials for use in a variety of diverse markets: personal care including sunscreens, architectural coatings, industrial coating ingredients, abrasion-resistant additives, plastics additives, medical diagnostics, architectural window cleaning and restoration, and a variety of polishing applications, including semiconductors and optics. We target markets in which we feel practical solutions may be found using our products. We work closely with current and potential customers in these target markets to identify their material and performance requirements and market our materials to various end-use applications manufacturers. Recently developed technologies have made certain new products possible and opened potential new markets. For example, we have applied our skills at producing precisely defined nanomaterials to now create and sell sub-micron material products. Our focus is on customer need where we believe we have an advantage, as opposed to pushing one particular technology. We expect growth in end-user (manufacturing customers, including customers of Nanophase s customers) adoption in 2013 and beyond. Our initiatives in targeted market areas are progressing at differing rates of speed, but we have been broadly moving through testing and development cycles, and in a number of cases believe we are approaching first revenue or next stage revenue with particular customers in the industries referenced above. For example, we commercially launched our family of abrasion-resistant additives during 2011 at the European Coatings Show, and have been working with potential customers, and now commercial customers, since. Our largest customer launched a new product in 2012 that featured material we developed. We also developed new solutions in the polishing and energy-management areas. We expect that we will both work more deeply with current customers and attract additional customers, which should help us achieve growth in these markets in 2013 and beyond.

Critical Accounting Estimates

We review long-lived assets for impairment whenever events or changes in circumstances indicate that the asset s carrying amount may not be recoverable. We conduct long-lived asset impairment

Table of Contents

analyses in accordance with Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 360-10-15, *Impairment or Disposal of Long-Lived Assets*. ASC 360-10-15 requires us to group assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities and evaluate the asset group against the sum of the undiscounted future cash flows. If the undiscounted cash flows do not indicate the carrying amount of the asset is recoverable, an impairment charge is measured as the amount by which the carrying amount of the asset group exceeds its fair value based on discounted cash flow analysis or appraisals.

Certain assumptions are necessary to assess the impact of risks and uncertainties on the financial information, such as cash flow projections, availability of capital if needed to support the ongoing operations of the business, and our expected compliance with contractual commitments. Any changes in those plans or assumptions could have a material impact on the Company s liquidity and financial condition.

Results of Operations

Years Ended December 31, 2012 and 2011

Total revenue increased to $10,036,705 in 2012, compared to $9,650,787 in 2011. A substantial majority of our revenue for each year is from our largest customers, in particular sales to our largest customer in personal care and sunscreen applications. Product revenue, the primary component of our total revenue, increased to $9,725,064 in 2012, compared to $9,321,042 in 2011. The increase in product revenue was primarily attributed to increased sales to our largest customer, offset in part by a reduction in sales to our second largest customer, and an increase in revenue from more recent, smaller customers associated with our customer direct selling model. We expect all three trends to continue as we enter 2013 as our largest customer launches new products featuring our material, our second largest customer addresses inventory and capacity aspects of a mature market area, and new and/or recently added customers adopt our solutions. Revenue from the top three customers was approximately 67%, 9% and 5%, respectively, during 2012, compared to 54%, 21% and 7% in 2011.

Other revenue decreased to $311,641 in 2012, compared to $329,745 in 2011. The majority of this other revenue ($279,000 in 2012 and $300,000 in 2011) was comprised of royalties received from CIK Nanotek. Our license agreement with CIK Nanotek and its related royalties will expire on March 31, 2013, and as such we anticipate our other revenue to be much smaller in the future.

The majority of the total revenue generated during the year ended December 31, 2012 was from our largest customer in sunscreens and personal care, followed by our largest customer specializing in polishing applications and our largest customer in industrial coating ingredients.

We use certain elements classified as Rare Earth elements in some of our processes, specifically cerium oxide in polishing applications. On a worldwide basis, the vast majority of these elements are currently supplied by China. Due to export limitations imposed by China during the summer of 2010, the supply of all Rare Earth elements was drastically reduced during 2011. This created significant issues with availability of acceptable materials and, if available, a substantial increase in cost. We have historically been successful in passing material costs through to our customers. While pricing and availability concerns eased significantly during 2012, the recent supply issue and severity of the price increase brings incremental uncertainty for customer acceptance of our related polishing business entering 2013. The long-term success of this area will be directly impacted by the supply and cost of Rare Earth elements, specifically cerium oxide.

Cost of revenue generally includes costs associated with commercial production and customer development arrangements. Cost of revenue increased to $7,395,332 in 2012, compared to $7,322,247 in 2011. The increase in cost of revenue was primarily driven by the increase in revenue volume, net of efficiencies related to this increase in product flow. We expect to continue new nanomaterial development, primarily using our NanoArc® synthesis and dispersion technologies, for targeted applications and new markets during 2013 and beyond. At current revenue levels we have generated a

Table of Contents

positive gross margin, though margins have been impeded by not having enough revenue to efficiently absorb manufacturing overhead that is required to work with current customers and expected future customers. We believe that our current fixed manufacturing cost structure is sufficient to support significantly higher levels of production. The extent to which margins grow, as a percentage of total revenue, will be dependent upon revenue mix, revenue volume, our ability to continue to cut costs and pass commodity market-driven raw materials increases on to customers. As product revenue volume increases, this should result in our fixed manufacturing costs being more efficiently absorbed, leading to increased margins. We expect to continue to focus on reducing controllable variable product manufacturing costs, with potential variability related to the commodity metals markets, but may or may not continue to realize absolute dollar gross margin growth through 2013 and beyond, dependent upon the factors discussed above.

Research and development expense, which includes all expenses relating to the technology and advanced engineering groups, primarily consists of costs associated with the development or acquisition of new product applications and coating formulations and the cost of enhancing the Company s manufacturing processes. As an example, we have been, and continue to be, engaged in research to enhance our ability to disperse material in a variety of organic and inorganic media for use as coatings and polishing materials, including window cleaning and polishing products. Much of this work has led to several new products and additional potential new products.

Having demonstrated the capability to produce pilot quantities of mixed-metal oxides in a single crystal phase, we do not expect development of further variations on these materials to present material technological challenges. Many of these materials exhibit performance characteristics that can enable them to serve in various catalytic applications. We are now working on several related commercial opportunities using the same materials. We expect that this technique should enable us to scale to large quantity commercial volumes once application viability and firm demand are established. We also have an ongoing advanced engineering effort that is primarily focused on the development of new nanomaterials as well as the refinement of existing nanomaterials, as dictated by our customer-driven marketing strategy. We are not certain when or if any significant revenue will be generated from the production of the materials described above.

Research and development expense decreased to $1,626,669 in 2012, compared to $1,737,201 in 2011. The primary reason for this decrease was the reduction in raw material costs associated with application development activities, as well as the completion of some basic research activities that moved fully into commercial operations. We do not expect research and development expense to increase significantly in 2013.

Selling, general and administrative expense decreased to $3,403,163 in 2012, compared to $3,954,750 in 2011. The net decrease was primarily attributed to decreases in personnel and related costs due to both temporary and permanent factors. As many of the temporary vacancies were filled during the year, we expect 2013 costs to be between 2011 and 2012 levels, and if certain initiatives are successful closer to the higher 2011 level.

Interest income decreased to $57 in 2012, compared to $3,928 in 2011. The decrease was primarily due to lack of investment yields in excess of bank related fees.

Inflation

We believe inflation has not had a material effect on our operations or financial position. However, supplier price increases and wage and benefit inflation, both of which represent a significant component of our costs of operations, may have a material effect on our operations and financial position in 2013 and beyond if we are unable to pass through any increases under present contracts or through to our markets in general.

21

Table of Contents

Liquidity and Capital Resources

Our cash, cash equivalents and short-term investments amounted to $4,154,234 as of December 31, 2012, compared to $2,723,623 on December 31, 2011. The net cash used in the Company s operating activities for the year ended December 31, 2012 was $599,504 compared to $2,915,600 on December 31, 2011. The 2011 figure includes $1.1 million in cash used by working capital changes. The decrease in cash used for working capital during 2012 was largely the result of the decrease in cerium oxide costs and the sale of material purchased prior to 2012. Net cash used in investing activities amounted to $167,239 for the year ended December 31, 2012, compared to $138,431 for the year ended December 31, 2011. Capital expenditures amounted to $272,657 (including $120,359 in capital leases) and $85,987 for the years ended December 31, 2012 and 2011, respectively. Net cash provided by financing activities increased to $2,197,354 in 2012, compared to $3,332 in cash provided by financing activities in 2011. During 2012 we completed a fully subscribed stockholder rights offering, pursuant to which our existing stockholders exercising their basic and oversubscription rights purchased a total of 7,250,000 shares of our common stock, which was the maximum number of shares offered in the rights offering, at a price of $0.33 per share. We received approximately $2.2 million in proceeds from the rights offering, net of costs.

During 2010 we obtained a line of credit with a bank in the amount of $1 million which was collateralized by certain assets. We did not utilize this credit line, and subsequently terminated it on March 26, 2012.

Our supply agreements with our largest customer, BASF, contain certain financial covenants which could potentially impact our liquidity. The most restrictive financial covenants under these agreements require that we maintain a minimum of $1 million in cash, cash equivalents and certain investments, and that we not have the acceleration of any debt maturity having a principal amount of more than $10,000,000, in order to avoid triggering a potential customer right to transfer certain technology and equipment to that customer at a contractually defined price. We had approximately $4.2 million in cash, cash equivalents and investments on December 31, 2012, and no debt.

We believe that cash from operations and cash, cash equivalents and investments on hand and accessible capital will be adequate to fund our operating plans through 2013. Our actual future capital requirements in 2013 and beyond will depend, however, on many factors, including customer acceptance of our current and potential nanomaterials and product applications, continued progress in research and development activities and product testing programs, the magnitude of these activities and programs, and the costs necessary to increase and expand our manufacturing capabilities and to market and sell our materials and product applications. Other important issues that will drive future capital requirements will be the development of new markets and new customers as well as the potential for significant unplanned growth with existing customers. Depending on the success of certain projects, we expect that capital spending relating to currently known capital needs for 2013 will be between $300,000 and $500,000. If those projects are delayed or ultimately prove unsuccessful, we would expect our capital requirements to be lower.

Should events arise that make it appropriate for us to seek additional financing, such additional financing may not be available on acceptable terms or even at all, and any such additional financing could be dilutive to our shareholders. Such financing could be necessitated by such things as the loss of existing customers; currently unknown capital requirements in light of the factors described above; new regulatory requirements that are outside our control; the need to meet previously discussed cash requirements to avoid a triggering event under our BASF agreement; or various other circumstances coming to pass that we currently do not anticipate. The failure to have access to sufficient capital to fund our business plans may result in a curtailment or other change in those plans.

Table of Contents

On September 16, 2011, we received notice from the Nasdaq stock market that the closing price of our common stock had fallen below $1 for thirty consecutive days and therefore we were not in compliance with Nasdaq Listing Rule 5550(a)(2). The Nasdaq granted us a 180 day grace period, through March 14, 2012, to regain compliance. Regaining compliance requires a closing bid price at or above $1 for ten consecutive trading days. During March 2012, our Company decided it was the in the best interest of its shareholders to voluntarily delist from the Nasdaq Capital Market and begin trading on the OTCQB marketplace. Trading on the OTCQB marketplace, under the symbol NANX, began on March 20, 2012. The failure to maintain an appropriate electronic trading venue may negatively impact our ability to access the financial markets.

On December 31, 2012, we had a net operating loss carryforward of approximately $77 million for income tax purposes. Because the Company may have experienced ownership changes within the meaning of the U.S. Internal Revenue Code in connection with its various prior equity offerings, future utilization of this carryforward may be subject to certain limitations as defined by the Internal Revenue Code. A layer of the carryforward expired in 2012 and another is expected to expire in 2018. If not utilized, the remaining carryforward will expire at various dates between January 1, 2018 and December 31, 2032. As a result of the annual limitation and uncertainty as to the amount of future taxable income that will be earned prior to the expiration of the carryforward, we have concluded that it is likely that some portion of this carryforward will expire before ultimately becoming available to reduce income tax liabilities. Changes in Illinois state tax law beginning in 2011 will impact net loss carryforward duration and utilization on the state tax level.

Off-Balance Sheet Arrangements

We have not created, and are not party to, any special-purpose or off-balance sheet entities for the purposes of raising capital, incurring debt or operating our business. We do not have any off-balance sheet arrangements or relationships with entities that are not consolidated into our financial statements that are reasonably likely to materially affect our liquidity or the availability of capital resources.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Not required for a smaller reporting company.

Item 8. Financial Statements and Supplementary Data

The financial statements, with the report of independent auditors, listed in Item 15 appear on pages F-1 through F-17 of this Form 10-K.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures. We are responsible for establishing and maintaining disclosure controls and procedures that are designed to ensure that information required to be disclosed by us in the reports filed by us under the Exchange Act is: (a) recorded, processed, summarized and reported within the time periods specified in the SEC s rules and forms; and (b) accumulated and communicated to our management, including our principal executive and principal financial officers, to allow timely decisions regarding required disclosures. It should be noted that in designing and evaluating our disclosure controls and procedures, we recognize that any controls and

procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and that our management necessarily was required to apply its judgment regarding the design of our disclosure controls and procedures. As of the end of the period covered by this report, we conducted an evaluation, under the supervision (and with the participation) of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation

Table of Contents

of our disclosure controls and procedures pursuant to Rules 13a-15(e) and 15d-15(e) of the Exchange Act. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective at reaching that level of reasonable assurance.

Management s Annual Report on Internal Control Over Financial Reporting. Management is responsible for the preparation, integrity and fair presentation of the financial statements and Notes to the financial statements. The financial statements were prepared in accordance with the accounting principles generally accepted in the U.S. and include certain amounts based on management s judgment and best estimates. Other financial information presented is consistent with the financial statements.

Management is also responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934. The Company s internal control over financial reporting is designed under the supervision of the Company s principal executive and financial officers in order to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. The Company s internal control over financial reporting includes those policies and procedures that:

(i) Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of assets of the Company;

(ii) Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and

(iii) Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of the Company s internal control over financial reporting as of December 31, 2012. In making this assessment, management used the criteria established in Internal Control Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Based on our assessment and those criteria, management believes that the Company maintained effective internal control over financial reporting as of December 31, 2012.

This annual report does not include an attestation report of the Company s registered public accounting firm regarding internal control over financial reporting. Management s report was not subject to attestation by the Company s registered public accounting firm pursuant to the rules of the Securities and Exchange Commission that permit the company to provide only management s report in this annual report.

Changes in Internal Control over Financial Reporting. The Company s management, including Mr. Jankowski, the CEO, and Mr. Cesario, the CFO, confirms that there was no change in the Company s internal control over financial reporting during the quarter ended December 31, 2012 that has materially affected, or is reasonably likely to materially affect, the Company s internal control over financial reporting.

Table of Contents

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

DIRECTORS

Set forth below is certain information regarding the directors of the Company.

Name	Age	Position with Company	Served as Director Since	Term Expires	Class
James A. Henderson	78	Chairman of the Board of Directors	2001	2013	I
James A. McClung, Ph.D.	75	Director	2000	2013	I
R. Janet Whitmore	58	Director	2003	2013	I
Jess A. Jankowski	47	President, Chief Executive Officer and Director	2009	2014	II
Richard W. Siegel, Ph.D.	75	Director	1989	2014	II
W. Ed Tyler	60	Director	2011	2014	II
George A. Vincent, III	68	Director	2007	2015	III

Mr. Henderson has served as a director of the Company since July 2001 and Chairman of the Board of Directors since August 2011. He retired as Chairman and Chief Executive Officer of Cummins Engine Company (now Cummins Inc.) in December 1999, after joining the company in 1964. Mr. Henderson became President and Chief Operating Officer of Cummins in 1977, was promoted to President and Chief Executive Officer in 1994 and served as Chairman and Chief Executive Officer from 1995 until his retirement in 1999. Mr. Henderson attended Culver Military Academy, holds an A.B. in public and international affairs from Princeton University and an M.B.A. from Harvard Business School. Mr. Henderson previously served as a director of AT&T, Inc., International Paper, Rohm & Haas, Hillenbrand, Inc., Inland Steel, and Ryerson, Inc. He serves as Chairman Emeritus of the Board of the Culver Education Foundation and is a past Chair of the Princeton University Board of Trustees. The Company believes that Mr. Henderson s extensive and diverse background in corporate leadership in technology-based companies, operations experience, and business acumen makes him a valuable member of its Board of Directors.

Mr. McClung has served as a director of the Company since February 2000, and is chairman of the Audit and Finance Committee. Currently he is Chairman & CEO of Lismore International. He retired as a senior vice president and executive officer for FMC Corporation (which has since been split into 3 public corporations: FMC Corp; FMC Technologies; John Bean Technologies), a leading producer of a diversified portfolio of chemicals and machinery. He has over 30 years of global business development and experience in over 75 countries, having managed and developed new technologies and production processes for diversified global businesses, including specialized chemicals and machinery, while living in the United States, Europe, and Africa. Mr. McClung currently serves as corporate board member of Alticor (Amway). Previously he has served on other corporate boards: NCCI, Turtle Wax, Beaulieu Corporation and Hu-Friedy. He was a founding member of the U.S.-Russia Business Council and is active in other international business organizations, such as Japan American Society, Chicago Council on Global Affairs, Executive Club of Chicago, and the Economic Club of Chicago. He serves as a board trustee at Thunderbird School of Global Management and the College of Wooster (Ohio). Mr. McClung earned a bachelor s degree from the College of

Wooster (Ohio), a master s degree from the University of Kansas, and a doctorate from Michigan State University. The Company believes that Mr. McClung s extensive global business development and worldwide management experience, including experience in the specialty chemical industry, make him a valuable member of its Board of Directors.

Table of Contents

Ms. Whitmore joined the board in November 2003. She is a former director of Silverleaf Resorts, Inc., where she served as Chairman of the Compensation Committee and as a member of the Audit Committee. She is also a former director of Epoch Biosciences, a supplier of proprietary products used to accelerate genomic analysis. Ms. Whitmore is Founder of Benton Consulting, LLC, which specializes in business development and processes. From 1976 through 1999, Ms. Whitmore held numerous engineering and finance positions at Mobil Corporation, including Mobil s Chief Financial Analyst and Controller of Mobil s Global Petrochemicals Division. Ms. Whitmore holds a B.S. degree in Chemical Engineering from Purdue University and an M.B.A. from Lewis University. The Company believes that Ms. Whitmore s combination of global financial, engineering, and management expertise makes her a valuable member of its Board of Directors.

Mr. Jankowski joined the board in February 2009. He has served as the Company s President and Chief Executive Officer since that time. After joining the Company in 1995, Mr. Jankowski held offices including Vice President of Finance, Chief Financial Officer, Secretary, Treasurer and Controller. From 1990-1995 he served as Controller for two building and public works contractors in the Chicago area, during which time he had significant business development responsibilities. From 1986 to 1990, he worked for Kemper Financial Services in their accounting control corporate compliance unit, serving as unit supervisor during his last two years. Mr. Jankowski holds a B.S. from Northern Illinois University and an M.B.A. from Loyola University. He has served on the TechAmerica Midwest Board from 2008 to 2012 and was an active member of the TechAmerica Midwest CFO Committee from 2006 through 2008. He was appointed to the Advisory Board of the Nanobusiness Commercialization Association in 2009. Mr. Jankowski was also appointed to the Romeoville Economic Development Commission and served from 2004 to 2010. He has also served on the advisory board of NITECH (Formerly WESTEC), an Illinois Technology Enterprise Center focusing on the commercialization of advanced manufacturing technologies from 2003 to 2008. In 2009, Mr. Jankowski was appointed to the board of directors of the Northern Illinois Technology Foundation, an economic development and technology transfer entity that is part of Northern Illinois University. The Company believes that Mr. Jankowski s long-term and intimate experience with Nanophase operations, along with his financial and management expertise, makes him a valuable member of its Board of Directors.

Dr. Siegel is a co-founder of the Company and has served as a director of the Company since 1989. Dr. Siegel served as a consultant to the Company from 1990 to 2002 with regard to the application and commercialization of nanomaterials. Dr. Siegel is an internationally recognized scientist in the field of nanomaterials. During his tenure on the research staff at Argonne National Laboratory from July 1974 to May 1995, he was the principal scientist engaged in research with the laboratory-scale synthesis process that was the progenitor of the Company s physical-vapor-synthesis production system. Dr. Siegel has been the Robert W. Hunt Professor in Materials Science and Engineering at Rensselaer Polytechnic Institute since June 1995, and served as Department Head from 1995 to 2000. In April 2001, Dr. Siegel became the founding Director of the newly created Rensselaer Nanotechnology Center at the Institute. During the period from 1995 until 1998, he was also a visiting professor at the Max Planck Institute for Microstructure Physics in Germany on an Alexander von Humboldt Research Prize received in 1994. During the period from 2003 until 2004 he was a visiting professor in Japan on a RIKEN Eminent Scientist Award. He chaired the World Technology Evaluation Center worldwide study of nanostructure science and technology for the U.S. government, has served on the Council of the Materials Research Society and as Chairman of the International Committee on Nanostructured Materials. He also served on the Committee on Materials with Sub-Micron Sized Microstructures of the National Materials Advisory Board and was the co-chairman of the Study Panel on Clusters and Cluster-Assembled Materials for the U.S. Department of Energy. He served on the Nanotechnology Technical Advisory Group to the U.S. President s Council of Advisors on Science and Technology during 2003-2009. Dr. Siegel holds an A.B. degree in physics from Williams College and an M.S. degree and Ph.D. from the University of Illinois at Urbana-Champaign. The Company believes that Dr. Siegel s value to its Board of Directors, as co-founder of the Company and inventor of its initial base technology, is self-explanatory.

26

Table of Contents

Mr. Tyler joined Nanophase as a director in January 2011. Mr. Tyler is Chairman of the Board of First Industrial Realty Trust, where he has served as a director since 2000. He has also served in recent leadership positions at Ideapoint Ventures, an early stage venture fund that focuses on nanotechnologies, and Industrial Nanotech, Inc., an entity which develops and sells nanomaterial solutions. Previously, Mr. Tyler served as President and CEO of Moore Corporation Limited, a provider of data capture, information design, marketing services, digital communications and print solutions. Mr. Tyler also worked for 24 years with R. R. Donnelley & Sons Company in Chicago, beginning his career as an electronics engineer and ultimately serving as Executive Vice President, Sector President, and Chief Technology Officer. He also was responsible for 77 Capital, an early stage venture capital subsidiary of Donnelley, where he was directly responsible for investment decisions and worked closely with the portfolio companies while participating on many of their boards. Mr. Tyler is a former Chairman of the American Red Cross (Mid-America Chapter) and Campaign Chairman of the United Way of Lake County, and serves as a director for several small, private companies. He is a member of the Board of Directors of Lake Forest Graduate School of Management, where he is also an adjunct faculty member. The Company believes that Mr. Tyler s extensive and diverse background in corporate leadership in technology-based companies, operations experience, and business acumen makes him a valuable member of its Board of Directors.

Mr. Vincent has served as a director of the Company since November 2007. He is the retired Chairman and President of The HallStar Company, where he served as CEO for twenty years. HallStar is a chemical manufacturer and innovator specializing in material science, marketing its products worldwide, primarily into the polymer and personal care industries. Prior to HallStar, Mr. Vincent held positions in purchasing, sales, commercial development and strategic planning with FMC Corporation (chemicals) and General Electric Company (chemicals and plastics). Mr. Vincent has served as Chairman of the Illinois Manufacturers Association (IMA) and the Chemical Industry Council of Illinois (CICI), as well as Director of the American Chemistry Council (ACC). Mr. Vincent serves on the Boards of several closely-held companies in the chemicals and materials industry sector. Mr. Vincent holds a Bachelor of Arts degree in Chemistry from Dartmouth College and an M.B.A. degree from Harvard Business School. The Company believes that Mr. Vincent s extensive experience in the chemicals industry and management leadership makes him a valuable member of its Board of Directors.

Meetings of the Board and Committees -- During the year ended December 31, 2012, the Board of Directors held seven formal meetings. No director missed more than one board or committee meeting held during 2012 (for all committees on which a particular director served).

Committees of the Board of Directors -- The Board of Directors has established an Audit and Finance Committee, Compensation and Governance Committee and a Nominating Committee. Each operates in accordance with its charter (available on our website www.nanophase.com under the Investor Relations section). The members of the Audit and Finance Committee are Mr. McClung (Chairman), Mr. Vincent and Dr. Siegel. The members of the Compensation and Governance Committee are Mr. Tyler (Chairman), Mr. Henderson, and Mr. Vincent. The members of the Nominating Committee are Mr. Henderson (Chairman), Mr. McClung, Dr. Siegel, Mr. Vincent, Mr. Tyler and Ms. Whitmore.

The Audit and Finance Committee generally has responsibility for retaining the Company s independent public auditors, reviewing the plan and scope of the accountants annual audit, reviewing the Company s internal control functions and financial management policies and reporting to the Board of Directors regarding all of the foregoing. The Audit and Finance Committee held six formal meetings in 2012. The Board of Directors has determined that Mr. Vincent and Mr. McClung are the audit committee financial experts as described in applicable SEC rules. Each member of the Audit and Finance Committee is independent, as defined in applicable SEC rules.

The Compensation and Governance Committee generally has responsibility for establishing executive officer and key employee compensation, reviewing and establishing the Company s executive compensation and general corporate governance policies and reporting to the Board of Directors regarding the foregoing. The Compensation and Governance Committee also has responsibility for administering the 2010 Equity Plan, determining the number of options, if any, to be granted to the Company s employees and consultants pursuant to the 2010 Equity Plan and reporting to the Board of Directors regarding the foregoing. The Compensation and Governance Committee held three formal meetings in 2012. Each member of the Compensation and Governance Committee is independent, as defined in applicable SEC rules.

Table of Contents

The Nominating Committee generally has responsibility for nominating candidates to serve on the Board of Directors. Five of the six members of the Nominating Committee are independent, as defined in applicable SEC rules. The Nominating Committee held one formal meeting in 2012.

The Board of Directors considers its role in risk oversight to focus primarily on evaluating risk at the entity and strategic levels, with management primarily responsible for managing day-to-day risk factors and presenting summary materials for those positions to the Board of Directors. Consistent with this philosophy, the Board of Directors has no formal policy as to whether the roles of Chief Executive Officer and Chairman should be segregated or combined. The Board of Directors considers the circumstances of the Company and makes a determination as to the appropriate leadership structure for the Company at that time. As of the time of this filing, the positions of CEO and Chairman are held by two individuals Mr. Henderson serves as Chairman and Mr. Jankowski serves as CEO. Mr. Henderson brings extensive experience in corporate leadership from his own working experience and from the many Boards on which he serves or has served in the past, and Mr. Jankowski is expected to benefit from that experience. The Board of Directors believes that is the most appropriate structure for the Company at this time.

The Board of Directors does not have a stated policy regarding diversity. The Board seeks experienced individuals for service who bring extensive experience in leadership, operations, finance, and engineering, particularly in areas directly applicable to the Company or its intended future endeavors.

EXECUTIVE OFFICERS

Set forth below is certain information regarding the executive officers of the Company as of the date of this Form 10-K who are not identified above as directors.

Name	Age	Position
Frank Cesario	43	Chief Financial Officer
Kevin Cureton	51	Vice President Sales, Marketing and Business Development
Nancy Baldwin	61	Vice President - Human Resources and Investor Relations
Patrick Murray, Ph.D.	46	Vice President - Research and Development

Mr. Cesario joined the Company in June 2009 as Chief Financial Officer. He brings more than 10 years of CFO and controller experience at manufacturing entities. Prior to joining Nanophase, Mr. Cesario served in a similar capacity with ISCO International, Inc., a publicly traded global supplier of telecommunications equipment, as well as Turf Ventures LLC, a privately held chemicals distributor. He began his career with KPMG Peat Marwick and then served in progressively responsible finance positions within Material Sciences Corporation and Outokumpu Copper, Inc. Mr. Cesario holds an M.B.A. (Finance) from DePaul University and a B.S. (Accountancy) from the University of Illinois, as well as being a registered CPA in the state of Illinois.

Mr. Cureton joined the Company in November 2012 as Vice President of Sales, Marketing and Business Development. His chemical industry experience has spanned more than twenty years with companies including twelve years at AMCOL, where one of his roles was Managing Director of its nanomaterial-based Health & Beauty Solutions division. Prior to that, he made significant contributions at Air Products, Borden, and other entities. He holds an undergraduate degree in chemical engineering from Carnegie Mellon University and an M.B.A. from the University of Chicago.

Ms. Baldwin has served as the Director of Human Resources and Information Technology since joining the Company in 2000. In September of 2008, she was appointed as the Company s Vice President of Human Resources and Investor

Relations. Prior to joining Nanophase, she served as Vice President of iLink Global, and Chief Human Resources Officer at the Marketing Store, a global supplier to

Table of Contents

McDonald s Corporation. Previous experience includes 14 years at Arthur Andersen, LLP & Andersen Consulting, LLP in various positions. Ms. Baldwin has a B.S. in Education from Western Illinois University and post graduate studies at Northern Illinois University. In 2010, Ms. Baldwin was appointed to the Romeoville Economic Development Commission. She is currently an active member of the Will County Three Rivers Manufacturing Human Resources Association.

Dr. Murray joined the Company in 2001 as a senior scientist. He was promoted to Director of Research and Development in 2005 and appointed Vice President of Research and Development in 2008. He holds an undergraduate degree in Biochemistry from Illinois Benedictine College (Benedictine University) and a doctorate in Organic Chemistry from the University of Illinois at Urbana-Champaign. Dr. Murray has over 15 years of experience in the areas of polymer synthesis, particle dispersion, chemical process development and technical project management. Dr. Murray has been focused on dispersion product development and technical support for business development. Prior to joining Nanophase, Dr. Murray held various research and management positions at Nalco Chemical Company.

The Board of Directors elects executive officers and such executive officers, subject to the terms of their employment agreements, serve at the discretion of the Board of Directors. Messrs. Jankowski, Cesario, and Cureton, Ms. Baldwin, and Dr. Murray each have employment agreements with the Company. See Item 11 below. There are no family relationships among any of the directors or officers of the Company.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16 of the Exchange Act requires the Company s officers (as defined under Section 16), directors and persons who beneficially own greater than 10% of a registered class of the Company s equity securities to file reports of ownership and changes in ownership with the SEC. Based solely on a review of the forms it has received and on written representations from certain reporting persons that no such forms were required for them, the Company believes that during 2012 all Section 16 filing requirements applicable to its officers, directors and 10% beneficial owners were complied with by such persons, except as follows. During 2012, several Form 4 filings related to the participation of our officers and directors in our stockholder rights offering were filed three or more business days after the transactions were committed due to administrative processes surrounding the offering, as many stockholders did not know their final allocations in the rights offering until up to ten days after the closing date. In addition, the Form 4 filed for Kevin Cureton disclosing his initial stock option grant upon his arrival at the Company was filed as soon as administratively practical but was not filed within two business days of the grant date.

CODE OF ETHICS

The Company has adopted a Code of Business Conduct and Ethics (Code of Ethics) that applies to, among others, the Company s principal executive officer, principal financial officer and principal accounting officer or controller, or persons performing similar functions. The Code of Ethics is posted on its Internet website www.nanophase.com under the Investor Relations section. In the event that the Company makes any amendment to, or grants any waiver from, a provision of the Code of Ethics that requires disclosure under applicable SEC rules, the Company intends to disclose such amendment or waiver on its website.

Item 11. Executive Compensation

Compliance with Section 162(m)

The Compensation and Governance Committee currently intends for all compensation paid to the executive officers to be tax deductible to the Company pursuant to Section 162(m) of the Internal Revenue Code (Section 162(m)). Section 162(m) provides that compensation paid to the executive officers in excess of $1,000,000 cannot be deducted by the Company for Federal income tax purposes

Table of Contents

unless, in general, (1) such compensation is performance-based, established by a committee of outside directors and objective, and (2) the plan or agreement providing for such performance-based compensation has been approved in advance by stockholders. The Compensation and Governance Committee believes that the requirements of Section 162(m) are uncertain at this time and may arbitrarily impact the Company. In the future, the Compensation and Governance Committee may determine to adopt a compensation program that does not satisfy the conditions of Section 162(m) if in its judgment, after considering the additional costs of not satisfying Section 162(m), such program is appropriate.

SUMMARY COMPENSATION TABLE

The following table sets forth a summary of the compensation for each of our named executive officers in U.S. dollars for the financial years ended December 31, 2012 and 2011.

Name and Principal Position	Year	Salary ($)	Bonus ($) (1)	Option Awards ($) (2)	Non-Equity Incentive Plan Compensation ($) (3)	All Other Compensation ($) (4)	Total ($)
Jess Jankowski	2012	$ 281,342	$ 48,000	$ 22,073	$	$ 27,572	$ 378,987
Chief Executive Officer	2011	$ 274,060	$ 30,000	$ 75,019	$	$ 28,848	$ 407,927
Frank Cesario	2012	$ 159,231	$ 13,000	$ 9,235	$	$ 6,123	$ 187,589
Chief Financial Officer	2011	$ 127,577	$ 8,000	$ 27,360	$	$ 6,115	$ 169,052
Patrick Murray	2012	$ 168,408	$ 20,000	$ 11,712	$	$ 23,032	$ 223,152
Vice President Research and Development	2011	$ 164,409	$ 12,000	$ 37,950	$	$ 24,308	$ 238,667
Nancy Baldwin	2012	$ 155,654	$ 13,000	$ 9,235	$	$ 12,747	$ 190,636
Vice President Human Resources and Investor Relations	2011	$ 153,206	$ 8,000	$ 27,360	$	$ 13,115	$ 201,681

(1) These amounts were earned in 2012 and 2011, but paid in early 2013 and 2012, respectively. Bonus compensation is driven by company performance against its goals as ultimately determined by the Board of Directors. A set of company-level objectives is created at the beginning of the year, focusing on total revenue, revenue growth, particular sources of revenue growth, business development achievements, and cash flows and related targets, as well as a small discretionary component designed to capture items not specifically listed. Each measure has four levels of achievement, typically 0%, 50%, 75% and 100% of the value of that item in the aggregate bonus measurement. The resulting bonus calculation is then applied to each individual s bonus potential as a percentage of salary.

(2) The amounts in this column represent the aggregate fair value of awards granted in 2012 and 2011 fiscal years in accordance with FASB ASC Topic 718. See Note 10 of the notes to our financial statements contained elsewhere in this Form 10-K for a discussion of all assumptions made by us in determining the FASB ASC Topic 718 values.

(3) None.

(4) The amounts in this column represent 401(k) match, health and life insurance. Health insurance benefits are the same for all employees. Life insurance is provided in the amount of one times the annual base salary with a

maximum of $150,000.

Employment Agreements

Effective as of August 12, 2009, the Company entered into an employment agreement with Jess Jankowski in connection with his services as President and Chief Executive Officer of the Company. No term has been assigned to Mr. Jankowski s employment agreement.

Pursuant to the terms of his employment agreement, Mr. Jankowski will receive an annual base salary of not less than $275,000. In addition, Mr. Jankowski will be eligible for discretionary bonuses for services to be performed as an executive officer of the Company based on performance and achieving milestones approved by the Board of Directors of the Company (the Board).

Table of Contents

Mr. Jankowski will be eligible for such stock options and other equity compensation as the Board deems appropriate, subject to the provisions of the 2010 Equity Plan. Mr. Jankowski will also be entitled to the employee benefits made available by the Company generally to all other executive officers of the Company, subject to the terms and conditions of the Company s employee benefit plan in effect from time to time.

In the event Mr. Jankowski s employment is terminated other than for cause (as such term is defined in the employment agreement), Mr. Jankowski will receive a sum equal to Mr. Jankowski s base salary in effect at the time of termination for 52 full weeks after the effective date of termination, payable in proportionate amounts on the Company s regular pay cycle for professional employees, provided that Mr. Jankowski signs, without subsequent revocation, a separation agreement and release in a form acceptable to the Company. In addition, all stock options granted to Mr. Jankowski prior to termination will become fully vested and exercisable in accordance with the applicable option grant agreement and the 2010 Equity Plan. If he is terminated for cause, or if he resigns as an employee of the Company, Mr. Jankowski will not be entitled to any severance or other benefits accruing after the term of the employment agreement and such rights will be forfeited immediately upon the end of such term.

If, within two years after the occurrence of a change in control, as defined in his employment agreement, Mr. Jankowski s employment is terminated other than for cause, his responsibilities or annual compensation are materially reduced without his prior consent, or the Company ceases to be publicly held (each, a Trigger), then, subject to Mr. Jankowski signing, without subsequently revoking, a Separation Agreement and Release in a form acceptable to the Company, Mr. Jankowski will receive a sum equal to his base salary for 104 full weeks after the date the Trigger occurs. In addition, all stock options granted to Mr. Jankowski prior to the Trigger will become fully vested and exercisable in accordance with the applicable option grant agreement and the 2010 Equity Plan.

Effective as of June 24, 2009, the Company entered into an employment agreement with Mr. Frank Cesario providing for an annual base salary of not less than $150,000. The Company also granted to Mr. Cesario options to purchase up to 20,000 shares of Common Stock at an exercise price of $1.07 per share with options for one-third of such shares becoming exercisable on each of the first three anniversaries of the dates of grant. No term has been assigned to Mr. Cesario s employment agreement. As subsequently amended during 2012, if Mr. Cesario is terminated other than for cause (as such term is defined in Mr. Cesario s employment agreement), Mr. Cesario will receive severance benefits in an amount equal to Mr. Cesario s base salary for 26 weeks.

Effective as of November 28, 2012, the Company entered into an employment agreement with Mr. Kevin Cureton providing for an annual base salary of not less than $190,000. No term has been assigned to Mr. Cureton s employment agreement. If Mr. Cureton is terminated other than for cause (as such term is defined in Mr. Cureton s employment agreement), Mr. Cureton will receive severance benefits in an amount equal to Mr. Cureton s base salary for 26-39 weeks, with the amount beginning at 39 weeks if terminated within the first year and declining annually to 26 weeks after three full years of employment. A signing bonus of $25,000 was paid upon Mr. Cureton s acceptance of employment. Subject to the terms of his employment agreement, should Mr. Cureton s employment terminate within six months of his start date, he must return 100% of the signing bonus. If his employment terminates after six months but prior to one year, then he must return 75% of the signing bonus. After one year of employment the signing bonus becomes nonrefundable.

Effective as of September 25, 2008, the Company entered into an employment agreement with Dr. Patrick Murray providing for an annual base salary of not less than $150,000. No term has been assigned to Dr. Murray s employment agreement. If Dr. Murray is terminated other than for cause (as such term is defined in Dr. Murray s employment agreement), Dr. Murray will receive severance benefits in an amount equal to Dr. Murray s base salary for 26 weeks.

31

Table of Contents

Effective as of September 25, 2008, the Company entered into an employment agreement with Ms. Nancy Baldwin providing for an annual base salary of not less than $150,000. No term has been assigned to Ms. Baldwin s employment agreement. If Ms. Baldwin is terminated other than for cause (as such term is defined in Ms. Baldwin s employment agreement), Ms. Baldwin will receive severance benefits in an amount equal to Ms. Baldwin s base salary for 26 weeks.

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END

The following table sets forth information regarding each unexercised option held by each of our named executive officers as of December 31, 2012.

	Option Awards				Stock Awards		
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date	Number of Shares of Stock That Have Not Vested (#)	Market Value of Shares of Stock That Have Not Vested ($)	Equity Incentive Plan Awards: Number of Shares, Units or Other Rights That Have Not Vested (#)	Equity Incentive Plan Awards: Market or Payout Value of Shares, Units or Other Rights That Have Not Vested ($)
Jess Jankowski	18,000	-0-	$ 3.660	03/24/13				
	11,000	-0-	$ 5.550	10/11/14				
	10,000	-0-	$ 6.030	09/27/15				
	15,000	-0-	$ 6.010	09/27/16				
	18,000	-0-	$ 4.480	11/06/17				
	23,000	-0-	$ 3.140	05/12/18				
	30,000	-0-	$ 1.020	05/04/19				
	18,000	9,000	$ 1.700	05/03/20				
	28,333	56,667	$ 1.260	05/02/21				
	-0-	98,000	$ 0.300	08/07/22				
Frank Cesario	20,000	-0-	$ 1.070	06/24/19				
	13,333	6,667	$ 1.700	05/03/20				
	10,333	20,667	$ 1.260	05/02/21				
	-0-	41,000	$ 0.300	08/07/22				

Kevin Cureton	-0-	52,000	$ 0.300	11/28/22
Patrick Murray	3,000	-0-	$ 5.550	10/11/14
	3,000	-0-	$ 6.030	09/27/15
	9,000	-0-	$ 6.010	09/27/16
	9,000	-0-	$ 4.480	11/06/17
	16,000	-0-	$ 3.140	05/12/18
	30,000	-0-	$ 1.020	05/04/19
	18,000	9,000	$ 1.700	05/03/20
	14,333	28,667	$ 1.260	05/02/21
	-0-	52,000	$ 0.300	08/07/22
Nancy Baldwin	3,000	-0-	$ 5.550	10/11/14
	7,500	-0-	$ 6.010	09/27/16
	9,000	-0-	$ 4.480	11/06/17
	15,000	-0-	$ 3.140	05/12/18
	30,000	-0-	$ 1.020	05/04/19
	18,000	9,000	$ 1.700	05/03/20
	10,333	20,667	$ 1.260	05/02/21
	-0-	41,000	$ 0.300	08/07/22

Table of Contents

POTENTIAL PAYMENT UPON TERMINATION OR CHANGE IN CONTROL

Severance Benefits. Please see discussion of severance benefits under Employment Agreements above.

Change in Control. Upon a change in control, the 2001 Equity Compensation Plan (the predecessor to the 2004 Equity Compensation Plan), the 2004 Equity Compensation Plan (the predecessor to the 2010 Equity Plan) and the 2010 Equity Plan each provide that: (1) vesting under all outstanding stock options will automatically accelerate and each option will become fully exercisable; (2) the restrictions and conditions on all outstanding restricted shares shall immediately lapse; and (3) the holders of performance shares will receive a payment in settlement of the performance shares, in an amount determined by the Compensation and Governance Committee, based on the target payment for the performance period and the portion of the performance period that precedes the change in control. If the Company is not the surviving entity, the successor is required to assume all unexercised options.

The following table quantifies the estimated payments that would be made in each covered circumstance to our named executive officers:

Name	Termination by Company Without Cause (1)	Change in Control (2)	Involuntary Termination in connection with or following a Change in Control (3)
Jess Jankowski	$ 292,000		$ 584,000
Frank Cesario	$ 80,000		$ 80,000
Kevin Cureton	$ 142,500		$ 142,500
Patrick Murray	$ 87,500		$ 87,500
Nancy Baldwin	$ 80,000		$ 80,000

(1) This amount represents the severance benefits that would be received under the executive officer s employment agreement as described had the executive officer been terminated by the Company without cause on December 31, 2012.

(2) This amount represents an estimate of the value that would have been received under the equity compensation plans had a change in control occurred as of December 31, 2012 and the executive officers benefited from an acceleration of vesting in the equity-based plan awards, as described above. For this purpose, the closing price of our common stock as of December 31, 2012 was used. The amount represents the difference between the exercise price of any unvested options and $0.34.

(3) This amount represents an estimate of the payments and value that would have been received by the executive officers had the executive officers been terminated by the Company without cause on December 31, 2012 in connection with a change in control on this date.

DIRECTOR COMPENSATION

Upon first being elected to the Board of Directors, each director of the Company who is not an employee or consultant of the Company (an Outside Director) is granted stock options to purchase shares of common stock at the closing price as of the date of issuance (the fair market value). This initial option grant to an Outside Director typically vests over three years, though may accelerate upon termination from the Board of Directors.

In 2012, the Company paid $5,500 as quarterly compensation to the Chairman of the Board of Directors, for an annual rate of $22,000. Mr. Henderson began receiving this quarterly rate after he became Chairman of the Board of Directors during August 2011. The Company paid $4,500 as quarterly compensation to the Chairman of the Audit and Finance Committee and to the Vice Chairman of the Board of Directors (role no longer utilized entering 2013) totaling $18,000 to each. All other Outside Directors were paid $4,000 each as quarterly compensation, which amounts to an annual total of $16,000 per each other Outside Director for services performed in their capacity as a director.

Table of Contents

During the third quarter 2012, the Company granted its Outside Directors stock options totaling 79,000 shares, under the 2010 Equity Plan.

Prior to 2011, the Company granted its Outside Directors stock appreciation rights (SAR s) totaling 106,750 shares, under the Company s Amended and Restated 2006 Stock Appreciation Rights Plan and subsequently under the 2010 Equity Plan as approved by the shareholders in August of 2010. No awards were granted during 2011 or 2012. The SAR s granted vested immediately and are payable upon the directors termination from the position of director. The fair value of the liability for the 73,500 shares that were outstanding on December 31, 2012 was $8,749.

In 2011, the Company paid $5,500 as quarterly compensation to the Chairman of the Board of Directors totaling $22,000. The Company paid $4,500 as quarterly compensation to the Chairman of the Audit and Finance committee and Vice Chairman totaling $18,000 each. The Company paid all other Outside Directors $4,000 each, which will amount to an annual total of $16,000 per Outside Director for services performed in their capacity as directors.

In 2005, the Company adopted, and the Shareholders approved, the 2005 Non-Employee Director Restricted Stock Plan (the Director Restricted Stock Plan) which reserved 150,000 shares of the Company s common stock to be issued to Outside Directors in the form of restricted shares. In 2005, no awards were made under the Director Restricted Stock Plan. In 2005, the Company also adopted the Non-Employee Director Deferred Compensation Plan (the Director Deferred Compensation Plan) which permits an Outside Director to defer the receipt of director fees until separation from service or the Company undergoes a change in control. The Company amended the Director Restricted Stock Plan in 2005 to permit an Outside Director to defer receipt of restricted stock granted under it. The deferred restricted shares are accounted for under the Director Deferred Compensation Plan and issued upon separation from service or the Company s change in control. Under the Director Deferred Compensation Plan, the deferred fees that would have been paid in cash are deemed invested in 5 year U.S. Treasury Bonds during the deferral period. The accumulated hypothetical earnings are paid following the Outside Director s separation from service or the Company s change in control. The deferred fees that would have been paid as restricted shares are deemed invested in common stock of the Company during the deferral period. The Director Deferred Compensation Plan is an unfunded, nonqualified deferred compensation arrangement. In 2009, all Outside Directors elected to defer receipts of all of the restricted shares they became entitled to under the Director Restricted Stock Plan, which was consolidated into the 2010 Equity Plan.

All Outside Directors are reimbursed for their reasonable out-of-pocket expenses incurred in attending board and committee meetings. Mr. Pearlman retired upon the completion of his term proximate to the November 2012 annual meeting of shareholders.

2012 Outside Director Compensation

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)	Stock Appreciation Rights ($)	Total($)
James A. Henderson	$ 22,000	$ 3,379		$ 25,379

James A. McClung	$ 18,000	$ 2,703	$ 20,703
Jerry K. Pearlman*	$ 16,000	$ 2,252	$ 18,252
Richard W. Siegel, Ph.D.	$ 16,000	$ 2,252	$ 18,252
R. Janet Whitmore	$ 16,000	$ 2,252	$ 18,252
George A. Vincent, III	$ 18,000	$ 2,703	$ 20,703
W. Ed Tyler	$ 16,000	$ 2,252	$ 18,252

* retired as of November 2012

Table of Contents

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

SECURITY OWNERSHIP OF MANAGEMENT

AND PRINCIPAL STOCKHOLDERS

The following table sets forth, as of March 15, 2013 certain information with respect to the beneficial ownership of our common stock by (1) each person known by the Company to own beneficially more than 5% of the outstanding shares of common stock, (2) each Company director, (3) each of the Company s named executive officers and (4) all Company executive officers and directors as a group.

Name	Number of Shares Beneficially Owned (1)	Percent of Shares Beneficially Owned
Bradford T. Whitmore	10,938,939(2)	38.4%
Spurgeon Corporation	3,034,710(3)	10.7%
Grace Brothers, Ltd.	2,433,300(4)	8.6%
James A. Henderson	118,666(5)	*
Richard W. Siegel, Ph.D.	398,504(6)	1.4%
James A. McClung	57,653(7)	*
W. Ed Tyler	6,666(8)	*
R. Janet Whitmore	581,379(9)	2.0%
George A. Vincent, III	18,000(10)	*
Jess A. Jankowski	248,467(11)	*
Kevin Cureton	(12)	*
Patrick Murray, Ph.D.	127,169(13)	*
Nancy Baldwin	113,153(14)	*
Frank J. Cesario	90,666(15)	*
All executive officers and directors as a group (11 persons)	1,760,323(16)	6.1%

Unless otherwise indicated below, the person s address is the same as the address for the Company.

* Denotes beneficial ownership of less than one percent.

(1) Beneficial ownership is determined in accordance with the rules of the SEC. Unless otherwise indicated below, the persons in the above table have sole voting and investment power with respect to all shares of common stock shown as beneficially owned by them.

(2) Includes 2,433,300 shares of common stock held by Grace Brothers, Ltd., 601,410 shares of common stock held by Grace Investments, Ltd. and 7,904,229 shares held by Bradford T. Whitmore. Mr. Whitmore is a general partner of both Grace entities. In such capacities, Mr. Whitmore shares voting and investment power with respect to the shares of common stock held by the Grace entities. This information is based on information reported on Schedule 13D/A filed during September 2012 with the SEC. The address of the stockholder is 1560 Sherman Avenue, Suite 900, Evanston, Illinois 60201.

(3) Includes 2,433,300 shares of common stock held by Grace Brothers, Ltd. and 601,410 shares of common stock held by Grace Investments, Ltd. Spurgeon Corporation is a general partner of both Grace entities and shares voting and investment power with respect to the shares of common

Table of Contents

stock held by such Grace entities. This information is based on information reported on Schedule 13D/A referenced above. The address of the stockholder is 1560 Sherman Avenue, Suite 900, Evanston, Illinois 60201.

(4) This information is based on information reported on Schedule 13D/A referenced above. The address of the stockholder is 1560 Sherman Avenue, Suite 900, Evanston, Illinois 60201.

(5) Includes Mr. Henderson s 8,666 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(6) Includes Dr. Siegel s 8,666 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(7) Includes Mr. McClung s 10,000 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(8) Includes Mr. Tyler s 6,666 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(9) Includes Ms. Whitmore s 16,666 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(10) Includes Mr. Vincent s 18,000 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(11) Includes Mr. Jankowski s 208,666 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(12) Includes Mr. Cureton s 0 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(13) Includes Dr. Murray s 125,666 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(14) Includes Ms. Baldwin s 112,166 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(15) Includes Mr. Cesario s 60,666 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

(16) Includes all executive officers and directors as a group s 575,828 shares of common stock issuable upon exercise of options exercisable currently or within 60 days of March 15, 2013.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The Company has not engaged in any transaction in which a related person had or will have a direct or indirect material interest during 2011 or 2012. No such transactions are currently contemplated.

Director Independence. The Board of Directors has determined that the following directors are independent as that term is defined in the rules and regulations of the SEC and the rules of the NASDAQ stock market: Mr. McClung, Mr. Henderson, Dr. Siegel, Mr. Tyler and Mr. Vincent. Even though the Company is no longer listed on NASDAQ, the Board of Directors used the NASDAQ listing standards in making its independence determinations.

Table of Contents

The Board of Directors has established an Audit and Finance Committee, Compensation and Governance Committee and a Nominating Committee. The members of the Audit and Finance Committee are Mr. McClung (Chairman), Mr. Vincent, and Dr. Siegel. The members of the Compensation and Governance Committee are Mr. Tyler (Chairman), Mr. Henderson, and Mr. Vincent. The members of the Nominating Committee are Mr. Henderson (Chairman), Mr. McClung, Dr. Siegel, Mr. Vincent, Mr. Tyler and Ms. Whitmore.

Item 14. Principal Accountant Fees and Services

Audit Fees. The aggregate amount billed by our principal accountant, McGladrey LLP, for audit services performed for the fiscal years ended December 31, 2012 and 2011 was approximately $139,000 and $158,000, respectively. Audit services include the auditing of financial statements and quarterly reviews.

Audit Related Fees. Total fees billed by McGladrey LLP was approximately $18,000 and $1,000 for the years ended December 31, 2012 and 2011, which may include costs incurred for reviews of registration statements, assistance with Staff comment letters, and consultation on various accounting matters in support of the Company s financial statements.

Tax Fees. There were no fees billed by our principal accountant for tax related services for the fiscal years ended December 31, 2012 and 2011.

All Other Fees. Other than those fees described above, during the fiscal years ended December 31, 2012 and 2011, there were no other fees billed for services performed by our principal accountant.

All of the fees described above were approved by Nanophase s Audit and Finance Committee.

Audit and Finance Committee Pre-Approval Policies and Procedures. Nanophase s Audit and Finance Committee pre-approves the audit and non-audit services performed by McGladrey LLP, our principal accountants, in order to assure that the provision of such services does not impair McGladrey LLP s independence. Unless a type of service to be provided by McGladrey LLP has received general pre-approval, it will require specific pre-approval by the Audit and Finance Committee. In addition, any proposed services exceeding pre-approval cost levels will require specific pre-approval by the Audit and Finance Committee.

The term of any pre-approval is 12 months from the date of pre-approval, unless the Audit and Finance Committee specifically provides for a different period. The Audit and Finance Committee will periodically revise the list of pre-approved services, based on subsequent determinations, and has delegated pre-approval authority to the Chairman of the Audit and Finance Committee. In the event the Chairman exercises such delegated authority, he shall report such pre-approval decisions to the Audit and Finance Committee at its next scheduled meeting. The Audit and Finance Committee does not delegate its responsibilities to pre-approve services performed by the independent auditor to management.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as part of this Form 10-K:

1. The following financial statements of the Company, with the report of independent registered public accounting firm, are filed as part of this Form 10-K:

Report of McGladrey LLP, Independent Registered Public Accounting Firm
Balance Sheets as of December 31, 2012 and 2011
Statements of Operations for the Years Ended December 31, 2012 and 2011
Statements of Stockholders Equity for the Years Ended December 31, 2012 and 2011
Statements of Cash Flows for the Years Ended December 31, 2012 and 2011
Notes to Financial Statements

Table of Contents

2. A list of exhibits required to be filed as part of this Form 10-K is set forth in the Exhibit Index beginning on page E-1 of this Form 10-K, which immediately precedes such exhibits, and is incorporated herein by reference.

Table of Contents

NANOPHASE TECHNOLOGIES CORPORATION

INDEX TO FINANCIAL STATEMENTS

Table of Contents

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders

Nanophase Technologies Corporation

We have audited the accompanying balance sheets of Nanophase Technologies Corporation as of December 31, 2012 and 2011, and the related statements of operations, stockholders equity, and cash flows for the years then ended. These financial statements are the responsibility of the Company s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company s internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Nanophase Technologies Corporation as of December 31, 2012 and 2011, and the results of its operations and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

/s/ McGladrey LLP

Schaumburg, Illinois

March 29, 2013

Table of Contents

NANOPHASE TECHNOLOGIES CORPORATION

BALANCE SHEETS

	As of December 31, 2012	2011
ASSETS		
Current assets:		
Cash and cash equivalents	$ 4,124,234	$ 2,693,623
Investments	30,000	30,000
Trade accounts receivable, less allowance for doubtful accounts of $6,000 on December 31, 2012 and 2011	1,031,405	878,600
Other receivables	27,167	13,712
Inventories, net	1,138,482	1,338,210
Prepaid expenses and other current assets	240,870	391,466
Total current assets	6,592,158	5,345,611
Equipment and leasehold improvements, net	3,027,671	3,713,082
Other assets, net	29,829	32,318
	$ 9,649,658	$ 9,091,011
LIABILITIES AND STOCKHOLDERS EQUITY		
Current liabilities:		
Current portion of capital lease obligations	$ 34,526	
Accounts payable	680,452	319,706
Accrued expenses	484,460	383,425
Accrued discount liability		116,103
Total current liabilities	1,199,438	819,234
Long-term portion of capital lease obligations	62,755	
Long-term deferred rent	636,628	647,404
Asset retirement obligations	153,967	148,515
Total long-term liabilities	853,350	795,919
Contingent liabilities		
Stockholders equity:		
Preferred stock, $.01 par value, 24,088 shares authorized and no shares issued and outstanding		
Common stock, $.01 par value, 35,000,000 shares authorized; 28,458,162 and 21,208,162 shares issued and outstanding on December 31, 2012 and December 31, 2011, respectively	284,582	212,082
Additional paid-in capital	95,512,065	93,070,979
Accumulated deficit	(88,199,777)	(85,807,203)

Total stockholders equity	7,596,870	7,475,858
	$ 9,649,658	$ 9,091,011

(See accompanying Notes to Financial Statements)

Table of Contents

NANOPHASE TECHNOLOGIES CORPORATION

STATEMENTS OF OPERATIONS

	Years ended December 31, 2012	2011
Revenue:		
Product revenue	$ 9,725,064	$ 9,321,042
Other revenue	311,641	329,745
Total revenue	10,036,705	9,650,787
Operating expense:		
Cost of revenue	7,395,332	7,322,247
Gross profit	2,641,373	2,328,540
Research and development expense	1,626,669	1,737,201
Selling, general and administrative expense	3,403,163	3,954,750
Loss from operations	(2,388,459)	(3,363,411)
Interest income	57	3,928
Interest expense	(7,119)	(4,012)
Other, net	2,947	(42)
Loss before provision for income taxes	(2,392,574)	(3,363,537)
Provision for income taxes		
Net loss	$ (2,392,574)	$ (3,363,537)
Net loss per share-basic and diluted	(0.10)	(0.16)
Weighted average number of basic and diluted common shares outstanding	24,476,605	21,206,036

(See accompanying Notes to Financial Statements)

Table of Contents

NANOPHASE TECHNOLOGIES CORPORATION

STATEMENTS OF STOCKHOLDERS EQUITY

Description	Preferred Stock Shares	Preferred Stock Amount	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Total
Balance on December 31, 2010		$	21,204,162	$ 212,042	$ 92,674,786	$ (82,443,666)	$ 10,443,162
Exercise of stock options			4,000	40	4,040		4,080
Stock-based compensation					392,153		392,153
Net loss for the year ended December 31, 2011						(3,363,537)	(3,363,537)
Balance on December 31, 2011		$	21,208,162	$ 212,082	$ 93,070,979	$ (85,807,203)	$ 7,475,858
Shareholder rights offering, net of costs			7,250,000	72,500	2,147,932		2,220,432
Stock-based compensation					293,154		293,154
Net loss for the year ended December 31, 2012						(2,392,574)	(2,392,574)
Balance on December 31, 2012		$	28,458,162	$ 284,582	$ 95,512,065	$ (88,199,777)	$ 7,596,870

(See accompanying Notes to Financial Statements)

Table of Contents

NANOPHASE TECHNOLOGIES CORPORATION

STATEMENTS OF CASH FLOWS

	Years ended December 31,	
	2012	**2011**
Operating activities:		
Net loss	$ (2,392,574)	$ (3,363,537)
Adjustments to reconcile net loss to cash used in operating activities:		
Depreciation and amortization	982,164	1,119,108
Share-based compensation	291,030	321,869
Loss on disposal of equipment	4,252	
Changes in assets and liabilities related to operations:		
Trade accounts receivable	(152,805)	(113,350)
Other receivables	(13,455)	548
Inventories	199,728	487,672
Prepaid expenses and other assets	150,596	(44,540)
Accounts payable	355,283	(561,318)
Accrued expenses	(23,723)	(762,052)
Net cash used in operating activities	(599,504)	(2,915,600)
Investing activities:		
Acquisition of equipment and leasehold improvements	(152,298)	(85,987)
Payment of accounts payable incurred for the purchase of equipment and leasehold improvements	(14,941)	(52,444)
Net cash used in investing activities	(167,239)	(138,431)
Financing activities:		
Principal payment on capital leases	(23,078)	(748)
Proceeds from shareholder rights offering, net of costs	2,220,432	
Proceeds from exercise of stock options		4,080
Net cash provided by financing activities	2,197,354	3,332
Increase (decrease) in cash and cash equivalents	1,430,611	(3,050,699)
Cash and cash equivalents at beginning of period	2,693,623	5,744,322
Cash and cash equivalents at end of period	$ 4,124,234	$ 2,693,623
Supplemental cash flow information:		
Interest paid	$ 7,120	$ 4,012
Supplemental non-cash investing and financing activities:		
	$ 20,404	$ 14,941

Accounts payable incurred for the purchase of equipment and leasehold improvements		
Capital lease obligations incurred in the purchase of equipment	$ 120,359	$

(See accompanying Notes to Financial Statements)

Table of Contents

NANOPHASE TECHNOLOGIES CORPORATION

NOTES TO FINANCIAL STATEMENTS

(1) Description of Business

Nanophase is an advanced materials and applications developer and commercial manufacturer with an integrated family of nanomaterial technologies. Nanophase produces engineered materials for use in a variety of diverse markets: personal care including sunscreens, architectural coatings, industrial coating ingredients, abrasion-resistant additives, plastics additives, medical diagnostics, architectural window cleaning and restoration, and a variety of polishing applications, including semiconductors and optics. We target markets in which we feel practical solutions may be found using nanoengineered products. We work closely with current and potential customers in these target markets to identify their material and performance requirements and market our materials to various end-use applications manufacturers. Recently developed technologies have made certain new products possible and opened potential new markets. During 2011 we launched our line of abrasion-resistant additives and have been working on related commercial development since. During 2012 our largest customer launched a new product containing our material, and we developed new solutions in polishing and energy-related areas that have been taken to potential customers or are in the process of qualification. Abrasion-resistant and polishing applications tend to have shorter testing cycles than other applications such as exterior coatings. Although the Company s primary strategic focus has been the North American market, it currently sells material to customers overseas and has been working to expand its reach within foreign markets. The Company was incorporated in Illinois on November 25, 1989, and became a Delaware corporation during November 1997. Beginning March 20, 2012, the Company s common stock has been trading on the OTCQB marketplace under the symbol NANX. Prior to that date, the Company s common stock traded on the NASDAQ Capital Market under the symbol NANX.

While product sales comprise the majority of our revenue, we also recognize revenue in connection with a technology license and other sources from time to time. These activities are not expected to drive the long-term growth of the business. For this reason, we classify such revenue as other revenue in our Statement of Operations, as it does not represent revenue directly from our nanocrystalline materials.

(2) Summary of Significant Accounting Policies

Use of Estimates and Risks and Uncertainties

The preparation of financial statements requires us to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates. Certain assumptions are also necessary to assess the impact of risks and uncertainties on the financial statements, such as cash flow projections, availability of capital if needed to support the ongoing operations of the business, and our expected compliance with contractual commitments. These risks and uncertainties are further discussed in Note 12. Any changes in these assumptions or business plans could have a material impact on the financial statements.

Cash and Cash Equivalents

Cash and cash equivalents primarily consist of demand deposits, but also include certain lower risk investments with a stated maturity upon acquisition of 90 days or less (e.g., money market funds or a certificate of deposit with a maturity of 90 days or less at the time of purchase).

Table of Contents

Trade Accounts Receivable

Trade accounts receivable are carried at original invoice amount less an estimate made for doubtful receivables based on a review of all outstanding amounts on a monthly basis. We determine the allowance for doubtful accounts by identifying troubled accounts and by using historical experience applied to an aging of accounts. Trade accounts receivable are written off when deemed uncollectible. Recoveries of trade accounts receivable previously written off are recorded when received.

The Company s typical credit terms are thirty days from shipment and invoicing.

Inventories

Inventories are stated at the lower of cost, maintained on a first in, first out basis, or market. We have recorded allowances to reduce inventory relating to excess quantities of certain materials. Write-downs of inventories establish a new cost basis, which is not increased for future increases in market value of inventories or changes in estimated excess quantities.

Equipment and Leasehold Improvements

Equipment is stated at cost and is being depreciated over its estimated useful life (3-20 years) using the straight-line method. Leasehold improvements are stated at cost and are being amortized using the straight-line method over the shorter of the useful life of the asset or the term of the lease (3-13 years). Depreciation expense for leased assets is included with depreciation expense for owned assets. From time to time the company has self-constructed assets. These assets are stated at cost plus the capitalization of labor and have an estimated useful life (7-10 years) using the straight-line method.

Long Lived Assets

We review long-lived assets for impairment whenever events or changes in circumstances indicate that the asset s carrying amount may not be recoverable. We conduct long-lived asset impairment analyses in accordance with ASC 360-10-15, *Impairment or Disposal of Long-Lived Assets*. ASC 360-10-15 requires us to group assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities and evaluate the asset group against the sum of the undiscounted future cash flows. If the undiscounted cash flows do not indicate the carrying amount of the asset is recoverable, an impairment charge is measured as the amount by which the carrying amount of the asset group exceeds its fair value based on discounted cash flow analysis or appraisals.

Asset Retirement Obligations

In connection with its leased facilities, the Company is required to remove certain leasehold improvements upon termination of its occupancy. We follow the provisions of the FASB issued ASC 410-20, under which we recognize a liability for the fair value of these asset retirement obligations. The fair value of that liability is measured based on an expected cash flow approach and accretion expense is recognized each period to recognize increases to the fair value of the liability due to the passage of time. Increases to the fair value of the liability, except for accretion, are added to the carrying value of the long-lived asset. Those increases are then reported in amortization expense over the estimated useful life of the long-lived asset.

Activity in the asset retirement obligation account for the years ended December 31, is as follows:

	2012	2011
Balance, beginning	$ 148,515	$ 141,407
Accretion of liability due to passage of time	5,452	4,940
Amortization of asset due to passage of time		2,168
Balance, ending	$ 153,967	$ 148,515

Table of Contents

Financial Instruments

We follow ASC Topic 820, *Fair Value Measurements and Disclosures*, which defines fair value, establishes a framework for measuring fair value, and expands disclosures about fair value measurements. The fair value framework requires the categorization of assets and liabilities into three levels based upon the assumptions (inputs) used to price the assets or liabilities. Level 1 provides the most reliable measure of fair value, whereas Level 3 generally requires significant management judgment.

Our financial instruments include cash and cash equivalents, accounts receivable, accounts payable and accrued expenses. The fair values of all financial instruments were not materially different from their carrying values.

There were no financial assets or liabilities adjusted to fair value on December 31, 2012 and 2011.

Product Revenue

Product revenue consists of sales of product that are recognized when realized and earned. This occurs when persuasive evidence of an arrangement exists, title transfers via shipment of products or when delivery has occurred, the price is fixed or determinable and collectability is reasonably assured.

Other Revenue

Other revenue includes revenue from a technology license. Technology license fees are recognized when earned pursuant to the agreed upon contractual arrangement, when performance obligations are satisfied, the amount is fixed or determinable, and collectability is reasonably assured.

In December 1997, we entered into a license agreement whereby we granted a royalty-bearing exclusive right and license, as defined, to purchase, make, use and sell nanocrystalline materials in designated parts of Asia to CIK Nanotek (formerly C. I. Kasei), a subsidiary of Itochu Corporation (CIK). Under this agreement, we also earned royalties on net sales of manufactured products containing nanocrystalline materials. The agreement also provided for minimum sales targets and minimum royalty payments to maintain exclusivity. The agreement expires on March 31, 2013, and in conjunction with a subsequent agreement between the parties which is scheduled to become effective April 1, 2013, the relationship between the entities is to become non-exclusive and royalty-free upon such termination. We recorded royalty revenues, classified as Other Revenue on the Statements of Operations, under this agreement of $279,000 and $300,000 for the years ended December 31, 2012 and 2011, respectively.

Shipping and handling costs are included in other revenue when products are shipped and invoiced to the customer. The Company includes the related cost of shipping and handling in cost of goods sold.

Research and Development Expenses

Research and development expenses are recognized as expense when incurred.

Income Taxes

We account for income taxes using the liability method. As such, deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Deferred tax assets and liabilities are calculated using the enacted tax rates and laws that are expected to be in effect when the

Table of Contents

anticipated reversal of these differences is scheduled to occur. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized.

When tax returns are filed, it is highly certain that some positions taken would be sustained upon examination by the taxing authorities, while others are subject to uncertainty about merits of the position taken or the amount of the position that would be ultimately sustained. The benefit of a tax position is recognized in the financial statements in the period during which, based on all available evidence, management believes it is more likely than not that the position will be sustained upon examination, including the resolution of appeals or litigation processes, if any. Tax positions taken are not offset or aggregated with other positions. Tax positions that meet the more-likely-than-not recognition threshold are measured as the largest amount of tax benefit that is more than 50 percent likely of being realized upon settlement with the applicable taxing authority. The portion of the benefits associated with tax positions taken that exceeds the amount measured, as described above, is reflected as a liability for uncertain tax benefits in the accompanying balance sheets along with any associated interest and penalties that would be payable to the taxing authorities upon examination.

We have not recorded a reserve for any tax positions for which the ultimate deductibility is highly certain but for which there is uncertainty about the timing of such deductibility. The Company files tax returns in all appropriate jurisdictions, which include a federal tax return and Illinois state tax return. Open tax years for both jurisdictions are 2009 to 2011, which statutes expire in 2013 to 2015, respectively, under most cases and subject to appropriate laws and regulations. When and if applicable, potential interest and penalty costs are accrued as incurred, with expenses recognized in selling, general and administrative expenses in the statements of operations. As of December 31, 2012 and 2011, we had no liability for unrecognized tax benefits.

Earnings Per Share

Net loss per common share is computed based upon the weighted average number of common shares outstanding. No equivalent shares are included in 2012 and 2011 because the effect of these securities is anti-dilutive, and because the impact on a per share basis would not be meaningful.

(3) Investments

Investments on December 31, 2012 and 2011, were comprised of certificates of deposit in the amount of $30,000, which are pledged as collateral, primarily for our rent in 2012 and 2011, and are restricted as to withdrawal or usage.

(4) Inventories

Inventories consist of the following:

	As of December 31,	
	2012	2011
Raw materials	$ 199,257	$ 490,729
Finished goods	999,391	907,647

	1,198,648	1,398,376
Allowance for excess quantities	(60,166)	(60,166)
	$ 1,138,482	$ 1,338,210

Table of Contents

(5) Equipment and Leasehold Improvements

Equipment and leasehold improvements consist of the following:

	As of December 31,	
	2012	**2011**
Machinery and equipment	$ 13,559,018	$ 13, 323,315
Office equipment	731,352	729,517
Office furniture	108,093	108,093
Leasehold improvements	4,748,660	4,723,348
Construction in progress	24,413	
	19,171,536	18,884,273
Less: Accumulated depreciation and amortization	(16,143,865)	(15,171,191)
	$ 3,027,671	$ 3,713,082

Depreciation expense was $974,221 and $1,109,518, for the years ended December 31, 2012 and 2011, respectively.

(6) Lease Commitments

The Company leases its operating facilities under operating leases. On October 18, 2005 Nanophase entered into a Lease Amendment amending its then-current lease for its facility in Romeoville, Illinois, which, among other things, extended the term of such lease through December 31, 2015 (with our option to extend the term for up to two additional five year periods) and granted Nanophase an option to purchase such facility in certain instances. The current monthly rent on this lease amounts to $28,700. Nanophase leases its Burr Ridge facility under an agreement whose initial term expired in September 1999. Nanophase renewed its Burr Ridge facility lease in September 2010, extending its terms through August 2014 (with our option to extend the term for up to three additional one-year periods). The current monthly rent on this lease amounts to $12,680. In August of 2010, we also renewed our lease for our offsite warehouse through August 2013. The current monthly rent on this lease amounts to $5,150.

The following is a schedule of future minimum lease payments including real estate taxes as required under the above operating leases:

Year ending December 31:	
2013	$ 644,305
2014	573,171
2015	464,917
2016	474,215
2017	483,699
Thereafter	4,234,607
Total minimum payments required:	$ 6,874,914

Rent expense, including real estate taxes, under these leases amounted to $646,737 and $625,001, for the years ended December 31, 2012 and 2011, respectively.

Table of Contents

On December 31, 2012 equipment under capital leases had a cost of $120,539 with accumulated depreciation of $9,123. The Company entered into four capital leases during the period ended December 31, 2012 compared to none for the same period in 2011. Principle and interest payments are due monthly under the capital lease obligations through January 2017.

(7) Accrued Expenses

Accrued expenses consist of the following:

	As of December 31,	
	2012	**2011**
Accrued payroll and related expenses	$ 377,403	$ 291,407
Accrued professional services	29,829	11,553
Other	77,228	80,465
	$ 484,460	$ 383,425

(8) Income Taxes

The Company has no income tax provision, current or deferred, relating to U.S. federal, state or local income taxes.

A reconciliation of income tax expense to the amount computed by applying the Federal income tax rate to loss before provision for income taxes as of December 31, 2012 and 2011 is as follows:

	2012	2011
Income tax credit at statutory rates	$ (813,475)	$ (1,143,603)
Nondeductible expenses	2,486	4,699
State income tax, net of federal benefits	(122,380)	(172,045)
Other	1,253	9,700
Increase in valuation allowance	932,116	1,301,249
	$	$

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company s deferred income taxes consist of the following:

	As of December 31,	
	2012	**2011**
Deferred tax assets:		

Net operating loss carryforwards	$ 30,028,000	$ 30,549,000
Capital loss carryforwards	109,000	109,000
Inventory and other allowances	34,000	36,000
Charitable contribution carryforwards	3,000	2,000
Excess (tax) book depreciation	361,000	218,000
Excess (tax) book amortization	60,000	58,000
Share-based compensation	1,159,000	1,045,000
Other accrued costs	279,000	290,000
Total deferred tax assets	32,033,000	32,307,000
Less: Valuation allowance	(32,033,000)	(32,307,000)
Deferred income taxes	$	$

Table of Contents

The valuation allowance decreased approximately $0.3 million and $0.9 million for the years ended December 31, 2012 and 2011, respectively (net of approximately $1.2 million and $2.2 million for 2012 and 2011, respectively, for expiring net operating loss carryforwards and credits) due principally to the change in the net operating loss carryforward and uncertainty as to whether future taxable income will be generated prior to the expiration of the carryforward period. Under the Internal Revenue Code, certain ownership changes, including the prior issuance of preferred stock and the Company s public offering of common stock, may subject the Company to annual limitations on the utilization of its net operating loss carryforward. As of December 31, 2012, the amounts subject to limitations has not yet been determined.

The Company has net operating loss carryforwards for tax purposes of approximately $77 million on December 31, 2012, which expire between 2018 and 2032. The Company has capital loss carryforwards for tax purposes of approximately $0.3 million on December 31, 2012 which expire in 2014.

During 2011, the state of Illinois suspended the use of net operating loss carryforwards for a four year period beginning 2011, extending the term of all net loss carryforwards by a corresponding four years.

(9) Capital Stock

On July 20, 2012, we completed a fully subscribed stockholder rights offering, pursuant to which our existing stockholders exercising their basic and oversubscription rights purchased a total of 7,250,000 shares of our common stock, which was the maximum number of shares offered in the rights offering, at a price of $0.33 per share. We received approximately $2.2 million in proceeds from the rights offering, net of costs. As of December 31, 2012 and 2011, the Company had 24,088 authorized but unissued shares of preferred stock. In addition, as of December 31, 2012, 1,277,138 authorized but unissued shares of common stock have been reserved for future issuance upon exercise of stock options.

(10) Stock Options and Stock Grants

We have entered into stock option agreements with certain officers, employees and directors. The stock options generally expire ten years from the date of grant.

Employee Stock Options

The Company follows FASB ASC Topic 718, *Share-Based Payments*, in which compensation expense is recognized only for share-based payments expected to vest. The Company recognized compensation expense related to stock options of $293,154 and $392,153 for the years ended December 31, 2012 and 2011, respectively.

As of December 31, 2012, there was approximately $309,000 of total unrecognized compensation cost related to nonvested share-based compensation arrangements granted under the Company s stock option plans. That cost is expected to be recognized over a remaining weighted-average period of 1.7 years.

The following table illustrates the various assumptions used to calculate the Black-Scholes option pricing model for options granted for all years presented: